

Mon Feb 27 10:38:13 EST 2017  
Pruitt.Scott@epamail.epa.gov  
Fw: American Coalition for Ethanol Fly-In Invite  
To: CMS.OEX@epamail.epa.gov

---

For the Daily Reading File

Process only the Point of Obligation letter. Scheduling will handle the meeting request. Thanks.

- Brian

---

**From:** Jonathon Lehman <jonathon@americancapitolgroup.com>  
**Sent:** Friday, February 24, 2017 5:59 PM  
**To:** Pruitt, Scott  
**Subject:** American Coalition for Ethanol Fly-In Invite

Administration Pruitt:

I work on behalf of the American Coalition for Ethanol here in D.C. I have been working biofuels issues since the inception of the RFS in Congress in the early 2000s.

Founded in 1987, ACE is the grassroots voice of the U.S. ethanol industry, uniting ethanol producers, farmers, small businesses in rural America, and individuals in support of our mission to make American ethanol the consumer fuel of choice. We organize a large annual Washington, DC, fly-in to give our grassroots members an opportunity to discuss critical and timely issues with Congress and to meet with leaders of the Administration.

Attached are two items:

1) An invite letter to speak at ACE's March 23 DC Fly In. We sent it originally as a save the date to the transition team before your confirmation, but sending again now.

2) A letter to you from ACE and other groups on the Renewable Fuels Standard Point of Obligation Issue.

Let me know if you have questions and we hope that you may have some time to speak to the group on March 23.

My phone number is (b) (6)

Thanks,

Jonathon

February 24, 2017

The Honorable Scott Pruitt  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Dear Administrator Pruitt:

As leading organizations of the U.S. biofuel and agricultural industries, we appreciate your stated commitment to the Renewable Fuel Standard (RFS). We write today to highlight one of the near-term issues you may be called upon to address — whether to modify the Renewable Fuel Standard’s point of obligation. We want to make clear that we strongly oppose any change to the point of obligation.

As you know, the RFS was enacted to help drive increased use of renewable fuels in the U.S. fuel supply. The levels called for in the statute are meant to spur the transition from E10 to higher ethanol blends in the U.S. transportation fleet. For over three years, the Obama administration’s erroneous interpretation<sup>1</sup> of the RFS has limited the biofuel industry’s growth envisioned by Congress and signed into law by the last Republican administration. This misinterpretation of law has undermined investor confidence and hindered further demand in the marketplace.

As a result, six biofuel groups were forced to sue the Obama administration over this issue, filing its petition for review on January 3, 2016. This litigation is ongoing with oral arguments scheduled for April 2017.

While this issue is being addressed in the courts, the renewable fuels industry has continued to work to expand E15 consumption. The point of obligation is one of the most important remaining tools to help drive higher blends remaining in the RFS. It creates economic incentives for gasoline retailers to offer higher blends such as E15 by providing an economic incentive for increased biofuels blending. Shifting the point of obligation as urged by its proponents would eliminate this incentive. In addition, the

---

<sup>1</sup>EPA’s use of the RFS waiver provision to reduce 2014, 2015, and 2016 volumes is not permissible under the law. The Renewable Fuels Standard included specific, limited, authority for the EPA to adjust the mandated levels specified for in the act. Section 211(o)(7) of the RFS sets out the specific criteria and process that EPA must follow while considering a waiver. Congress provided EPA with an extremely narrow waiver provision to ensure that it would not be misused to undermine the development of the renewable fuels industry. Under this authority, EPA can only waive gallon requirements if it finds: (1) that the RFS would cause “severe economic harm” to the economy or the environment; or (2) if there is an inadequate domestic supply. The Obama Administration improperly interpreted the second part of the waiver authority to look towards distribution infrastructure as a means to lower the statute — even though Congress expressly declined to allow this rationale.

proposed effort to shift the obligation would increase by almost 800 percent the number of entities required to comply with the RFS, creating a new and less efficient market.

The other immediate-term action we ask you to address is the Reid vapor pressure regulatory restriction on E15. We encourage you to also act on this swiftly so that consumers have access to low-cost, environmentally-friendly E15 year-round.

The continued growth of ethanol use in the United States is important to our energy security and rural economies. Ethanol production is a critical market for U.S. farmers. U.S. corn production has increased from 11.2 billion bushels in 2004 to 15.4 billion in 2016 — a 27.5% increase. Ethanol production, spurred by the RFS, has become an important buyer of this increased production. In 2015, ethanol producers purchased approximately 35% of the corn produced in the United States using approximately 24% of the crop to produce 15.1 billion gallons of ethanol and returning the remaining 11% to the livestock feed market as high quality distillers grains. This has helped stabilize commodity prices and rural economies over the last decade.

That said, the productivity of U.S. farmers continues to increase. Corn production continues to rise and increased demand is critical to the continued economic well-being of rural America. As growth in the ethanol sector has slowed, corn surpluses are putting pressure on prices and rural economies. According to USDA, net farm income has dropped from \$123.7 billion in 2013 to \$66.9 billion in 2016 — a decrease of 46%. From 2015 to 2016 alone, net farm income has fallen 17.2 percent. Farm sector equity decreased \$130 billion in 2016. Farm debt rose 5.2 percent in 2016. Agricultural states like Iowa (13.5 million acres of corn worth \$8.7 billion in 2015), Michigan (2.35 million acres of corn worth \$1.2 billion in 2015), Ohio (3.26 million acres of corn worth \$1.9 billion in 2015), and Wisconsin (4 million acres of corn worth \$1.7 billion in 2015) will be hard hit absent increased demand for corn.

While our industry works through the courts to undo the Obama administration's improper implementation of the RFS, the point of obligation is one of the most important tools left to facilitate higher ethanol usage. Changing it would not only further hamper industry efforts to build out E15, it would increase regulatory burdens in the sector and further harm rural economies in key states that supported President Trump because of his promises to create jobs and strengthen the U.S. economy. We encourage you to reject any efforts to move the point of obligation and work with us to lift the RVP regulatory burden on E15. We look forward to working with you to find additional ways to drive renewable fuels use and rural economic productivity and use moving forward.

Advanced Biofuels Business Council  
Growth Energy

American Coalition for Ethanol  
National Farmers Union



January 25, 2017

President Trump EPA Transition Team

The Honorable Scott Pruitt  
Nominee - Environmental Protection Agency Administrator  
Office of the Administrator 1101A  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Dear EPA Transition Team and Administrator-Nominee Pruitt:

On behalf of the American Coalition for Ethanol (ACE), I want to congratulate you on your nomination as Administrator of the Environmental Protection Agency. I am writing to ask that you save the date for our organization's 2017 fly-in in hopes that you will accept our invitation to speak with our members.

Founded in 1987, ACE is the grassroots voice of the U.S. ethanol industry, uniting ethanol producers, farmers, small businesses in rural America, and individuals in support of our mission to make American ethanol the consumer fuel of choice. We organize a large annual Washington, DC, fly-in to give our grassroots members an opportunity to discuss critical and timely issues with Congress and to meet with leaders of the Administration.

ACE is holding our fly-in on March 23, 2017, and we would be honored if you would join us to address our members during a morning strategic planning session. The morning session will occur at the Liaison Hotel from 8:00 a.m. to 12:00 p.m. The majority of our membership represents rural America, from the very states that helped elect President Trump in 2016.

A formal letter of invitation will be transmitted once the U.S. Senate confirms your appointment.

Thank you in advance for your consideration of this request. Your staff can contact Shannon Gustafson at 605-334-3381 ext. 16 or [sgustafson@ethanol.org](mailto:sgustafson@ethanol.org) to confirm your availability, or to answer any questions you have about the event.

Sincerely,

Brian Jennings, Executive Vice President  
American Coalition for Ethanol (ACE)

Mon Feb 27 10:39:12 EST 2017

Pruitt.Scott@epamail.epa.gov

Fw: Complaint -- Archie Elledge Waste Water Treatment Plant in Winston-Salem, NC (2801 Griffith Road, Winston-Salem, NC 27103)

To: CMS.OEX@epamail.epa.gov

---

---

**From:** (b) (6)

**Sent:** Friday, February 24, 2017 10:56 PM

**To:** Pruitt, Scott

**Subject:** Complaint -- Archie Elledge Waste Water Treatment Plant in Winston-Salem, NC (2801 Griffith Road, Winston-Salem, NC 27103)

Dear Mr. Pruitt:

I trust that you are well. I write you because I need your help. My name is (b) (6) and I live in a residential neighborhood close to the Archie Elledge Waste Water Treatment Plant here in Winston-Salem, NC. I attach a copy of a letter that I recently sent to the N.C. Department of Environmental Quality about the air pollution and noxious odor that pervades the air in the neighborhood where I live and also inside of my home (caused by the waste water treatment plant). As I write this e-mail message to you, the noxious gases are in my home. I am suffering. Previously, I have complained to the EPA and other state and local officials about this matter but they have refused to help me.

After you read the attached letter, which explains some of the problems, you will agree with the statement made by President Trump -- "Some things are laws and some things are common sense." If I had an e-mail address for President Trump, I would have copied him on this message.

The city of Winston-Salem, NC, intentionally created this problem. If they will not stop the harmful pollution, they should buy the property from me at fair market value.

I look forward to hearing from you soon. Thank you.

Respectfully,

(b) (6)

[Redacted signature block]

January 19, 2017

Bill Ross, Interim Secretary  
N.C. Department of Environmental Quality  
1601 Mail Service Center  
Raleigh, NC 27699-1601

RE: Complaint -- Archie?Elledge?Waste Water Treatment Plant in Winston-Salem, NC  
(2801 Griffith Road, Winston-Salem, NC 27103)

Dear Mr. Ross:

My name is (b) (6) and I live in the (b) (6) subdivision (single-family housing), which is near the Archie Elledge Waste Water Treatment Plant in Winston-Salem, NC. Ever since I moved into the neighborhood, I have suffered from the air pollution/odor that is created by the waste water treatment plant. Not only does the pollution/odor saturate the fresh air in the neighborhood, the pollution and odor enter my house.

Whenever the waste water treatment plant performs its operations during the night and early morning hours, I smell the noxious pollution/odor inside my home. It wakes me from my sleep. I breathe in the contamination. I cannot open my windows to air out the house because the air in the neighborhood is contaminated. I have to open my windows to air out my house during the day light hours, as the gases burn off during the day.

I have complained to your department before now and no actions have been taken. I have complained to the city of Winston-Salem and other agencies but no one has done anything about this matter.

If the N.C. Department of Environment Quality tests for compliance during the nights and early morning hours during the times that the Elledge waste water treatment plant is creating the air pollution, I have no doubt that the plant would fail inspection.

Bill Ross, Interim Secretary  
Page Two  
January 19, 2017

It is unreasonable and unethical for any city to allow residential building permits for an area that is already polluted and unhealthy for families to live. The city of Winston-Salem already knew that the waste water treatment plant is the source of contaminating the air in that

already knew that the waste water treatment plant is the source of contaminating the air in that area. They informed me that they invested in odor scrubbing technology regarding air quality. Why allow residential development in an area where the city is creating dangerous gases? The city's representatives indicate that they upgraded the plant with odor scrubbing technology by spending \$52 million. Yet, the contamination is still present. The air quality is poor and I am suffering and no doubt others who live in the neighborhood are too. There are children who live and play in this unhealthy environment.

I am asking the North Carolina Department of Environmental Quality to put a moratorium on all operations of the Archie Elledge Waste Water Treatment Plant until such time the city of Winston-Salem stops polluting and contaminating the air of the residents who reside in the Griffith Park neighborhood and nearby residential areas. Again, there is no doubt in my mind that if the air quality in the neighborhood is inspected during the nights and early mornings when the plant is operating and creating the noxious gases, the waste water treatment plant would fail inspection.

Please let me know if I need to provide you with additional information regarding this matter. I look forward to hearing from you soon.

Best regards,

(b) (6)



**From:** (b) (6)  
**Sent:** Sunday, February 26, 2017 10:46 AM  
**To:** Pruitt, Scott; Hernandez-Quinones, Samuel  
**Cc:** jruch@peer.org; Laura Dumais; info; Dianne DArrigo; Borello Chris; Joan Tibor McNeal; joshua.tallent; Commissioner Zucker  
**Subject:** Correction to 2017 PAG Manual

EPA Administrator Sco-tt Pruitt & Samuel Hernandez -(hernandez.samuel@epa.-gov)-  
U.S. Environmental Pr-otection Agency  
1200 Pennsylvania Ave-nue NW.-  
Washington, DC 20460-  
(202) 564-1735-

CORRECTION TO:- 2017 PAG M-anual: Protective Act-ion Guide (PAG) for D-rinking Water After a- Radiological Incident  
[EPA-HQ-OAR-2007-0268-; FRL-9958-50 OW] [See pages 6498-6-500, Federal Register-/Vol. 82, No. 12/Thur-sday, January 19,  
2017-/Notices]

Dear Administrator Pr-uit: I called the Di-rector of the Federal- Register to report s-erious errors in equa-tions appearing on pa-ges 63, 64 &  
65 of th-e 2017 PAG Manual (EP-A-400/R-17/001) @ [https://www.epa.gov/s-ites/production/files-/2017-01/documents/ep-a\\_pag\\_manual\\_final\\_re-visions\\_01-11-2017\\_co-ver\\_disclaimer\\_8.pdf](https://www.epa.gov/s-ites/production/files-/2017-01/documents/ep-a_pag_manual_final_re-visions_01-11-2017_co-ver_disclaimer_8.pdf). I was told they are- not responsible for -making  
corrections an-d to report errors to- the EPA Administ-r; c/o the contact pe-rson (Samual Hernande-z) listed in the Fede-ral Register  
Notice @- <https://www.gpo.gov/f-dsys/pkg/FR-2017-01-19/pdf/2017-01230.pdf>.-

Accordingly, please s-ee to it that the fol-lowing corrections ar-e made:

(A)- Pursuant to -40 CFR 141.66 (-Maximum contaminant l-evels for radionuclid-es)-1-, c-orrect the erroneous -equation on page 64 f-or the  
Derived Default Response Level (DRL)- for Iodine-131 by:-

Changing:- DRL = 5-00 mrem / (1.643 L/da-y \* 365 days \* 8.05 E--05 mrem/pCi) = 10,-352 pCi/L - (1)

To: - DRL = 500 mrem / (2.0-00 L/day \* 365 days \*- 1.85 E-03 mrem/pCi) = 375 pCi/L - (2)

- This -change makes the Emer-gency-PAG = -125- times the non-emerge-ncy MCL of 4 mrem/yr -for I-131 pursuant to- 40 CFR  
141.66(d)(1)-(2). [1]

After- an emergency has pas-sed, equation (2) yie-ls the non-emergency- MCL for I-131 of 3 p-Ci/L, e.g.:  
- DRL = 4 mrem / (2.000- L/day \* 365 days \* 1-.85 E-03 mrem/pCi) = 3 pCi/L - (3)

Multiple Radionuclide-s:

(B)- Pursuant to -40 CFR 141.66(d)(1)(2)-, when multiple radionuclide-s are present in drin-king water, please co-rrect the erroneous  
e-quations on page 65 b-y:

Changing:- F = (90-0 pCi/L /1,000 pCi/L)- + (4,500 pCi/L / 6,2-00 pCi/L) = 1.63 and - - (4)  
F = (900 pCi/L / 7,40-0 pCi/L) + (4,500 pCi/L /17,000 pCi/L) = 0-.38 - - (5)

To: - F = (900 pCi/L /8 pCi-/L) + (900 pCi/L /60 -pCi/L)+ (4,500 pCi/L -/200 pCi/L) = 112.5 + 15 + 22.5 =- 150 (6)

NOTE-S: -(a)A-s indicated in the at-tached "Objection.pdf" sent to your predec-essor, the F-value pr-edicted by Equation (-6) must be  
increased -by 4,500 divided by t-he MCL of Ba-137m, wh-ich is missing from t-he spread sheet in at-tached "233-DRLs.pdf". (b) According  
to the Nucleonica analyses in my Objection, the dose-contrib-ution from the only radioa-ctive decay product o-f I-131 (Xenon-131m) -is  
neglig ble.

#### Grossly Inflated DRLs & Fraud-ulent Computer Models

Please ask the EPAs Inspec-tor General to invest-igate the author[s] o-f the April 30, 2015 -Memo in the attached "Model-  
Fraud.pdf"; -entitled -"Discussion of Drinkin-g Water PAGs Based on- Doses to Critical Or-gans as Opposed to Ef-fective Whole Body Do-se  
Commitment", by SC&A and The Ca-dmus Group because it-s assumptions are not- consistent with 40 CFR 141.66 and "-Maximum  
Permissible B-ody Burdens and Maxim-um Permissible Concen-trations of Radionucl-ides in Air and in Wa-ter for Occupational -Exposure,"  
NBS (National Burea-u of Standards) Handb-ook 69 as amended Aug-ust 1963, U.S. Depart-ment of Commerce.

-Please also correct t-he erroneous DRLs list-ed in the attached "2-33-DRLs.pdf", and inc-lude missing DRLs & M-CLs for the 8  
decay p-roducts of Radium-226- (Rn-222, Po-218, Pb--214, Bi-214, Po-214, -Pb-210, Bi-210 & Po-2-10). Without this inf-ormation it will be  
i-mpossible for FEMP ma-nagers to develop an -effective emergency p-lan, as illustrated b-y the following examp-le:-

Section 2.1 I-131 of -the PAG Manual correc-tly states: "-As can be seen in App-endix A, the limiting- adult dose conversio-n factor  
for I-131 is- 4.32E-7 Sv/Bq for th-e thyroid, and the li-miting adult risk coe-fficient is 4.39E-10 -risk/Bq for thyroid c-ancer." -

Therefore, if an -adult woman drinks 2 -liters of water conta-minated by 3 pCi/L of- I-131 every 24 hours-, she will be ingesti-ng about  
215,000 I-131 atoms each day. The- Bateman Equation ana-lysis I ke that in my- Objection indicates -about 91.8% ( 211,000- I-131 atoms)  
will re-main after 24 hours, -when another 215,000 -atoms are ingested fo-r a total of 426,000,- and so on. Each day- the number of I-131  
-atoms grows until a s-teady state value is reached. The-reafter, her thyroid -will be receiving a c-onstant radiation dos-e from over a million-  
I-131 atoms, as well- as hundreds of thous-and Xenon-131m atoms that are not stored in her thyroid.

According to organ--based computer model-s, her thyroid will b-e receiving an annual- dose of 0.04 J/kg = -4 mrem = .04 Sv. If h-er  
thyroid weighs abo-ut 20 grams (.02 kg),- and she weighs about 60 kg- (132 pounds), her th-yroid will be receivi-ng an annual dose of -0.04  
J/kg x .02kg = 8-E-4 J, but her whole -body will be receivin-g much less atomic energy; about = 1.3-3E-5 J/kg = 1.33E-5 S-v = 1.33E-3  
mrem.



Therefore, her -thyroid dose will be about  $-4/1.33E-3 = 3,008$  time-s her whole body dose- -- NOT 98 times as -erroneously concluded in -the following example- from the aforementio-ned Memorandum by SC&-A, et. al:

“-The organ specific PA-G for thyroid cancer -associated with the i-ngestion of I-131 in -water would be derive-d as follows:

Thyroid -Cancer:  $4.39E-10 \text{ risk/Bq} \div 4.32E-7 \text{ Sv/Bq} = 1.02E-3 \text{ risk per Sv}$  -

The dose to the thyro-id gland that would r-esult in a lifetime r-risk of cancer of  $5E-4$  is as follows:

Thyroid -Cancer:  $5E-4 \text{ risk} \div 1-.02E-3 \text{ risk/Sv} = 0.49-0 \text{ Sv}$  or 49,000 mrem

Hence, if one were in-terested in establish-ing an I-131 PAG base-d on critical organ, -with the same lifetim-e risk of cancer to t-hat organ as an effec-tive whole body dose -of

500 mrem, the PAG -would be 49,000 mrem -to the thyroid; i.e.,- 98 times higher than- the whole body dose.”-

Prohibit Use of EPA M-ethod 900

Additionally, supplie-rs of public and bott-led water must be pro-hibited before, durin-g, and after a nuclea-r accident from using- EPA Method 900 to me-asure Gross Alpha act-ivity pursuant to 40 CFR 141.66 (c). As- indicated in the at-tached “Objection.pdf.”, my corrupt water c-ompany uses EPA Metho-d 900 to falsify both- Gross Alpha & Gross -Beta test results. Therefore, measuremen-ts based on EPA Metho-d 900 must be prohibi-ted

CONCLUSION: -As you know, this mat-ter is extremely urge-nt because FEMA plans to begin u-sing the 2107 PAG Man-ual during their eval-uation of offsite res-ponse organizations a-round nuclear power f-acilities 12 months a-fter it was published-, as noted in the January -10, 2017 Federal Regi-ster (pg. 6500) by Joel Beauvais, Dep-uty Assistant Adminis-trator, Office of Wat-er. Safe emergency ma-nagement plans cannot- be made using errone-ous equations on page-s 63 & 64 or fraudule-nt computer models cr-afted to violate key -sections of 40 CFR 141.66. [1]-

Yours truly -

(b) (6)

Reference [1]- § 141.66 Maximum cont-aminant levels for radionuclides. [From <https://www.law.corne-ll.edu/cfr/text/40/14-1.66>]-

(a) [Reserved]-

(b) MCL for combined -radium-226 and -228. -The maximum contamin-ant level for combined- radium-226 and radiu-m-228 is 5 pCi/L. The-combined radium-226 -and radium-228 value -is determined by the -addition of the resul-ts of the analysis fo-r radium-226 and the -analysis for radium-2-28.

(c) MCL for gross alp-ha particle activity -(excluding radon and -uranium). The maximum- contaminant level fo-r gross alpha particl-e activity (including- radium-226 but exclu-ding radon and uraniu-m) is 15 pCi/L.

(d) MCL for beta part-icle and photon radio-activity.

(1) The average annua-l concentration of be-ta particle and photo-n radioactivity from -man-made radionuclide-s in drinking water m-ust not produce an an-nual dose equivalent -to the total body or -any internal organ gr-eater than 4 millirem-/year (mrem/year).

(2) Except for the ra-dionuclides listed in- table A, the concentr-ation of man-made ra-dionuclides causing 4- mrem total body or o-rgan dose equivalents- must be calculated o-n the basis of 2 lite-r per day drinking wa-ter intake using the -168 hour data list in- “Maximum Permissible-Body Burdens and Max-imum Permissible Conc-entrations of Radionu-clides in Air and in -Water for Occupationa-l Exposure,” NBS (Nat-ional Bureau of Stand-ards) Handbook 69 as -amended August 1963, -U.S. Department of Co-mmerce. This incorpor-ation by reference wa-s approved by the Dir-ector of the Federal -Register in accordanc-e with 5 U.S.C. 552(a-) and 1 1 CFR part 51-. Copies of this docu-ment are available fr-om the National Techn-ical Information Serv-ice, NTIS ADA 280 282-, U.S. Department of -Commerce, 5285 Port R-oyal Road, Springfiel-d, Virginia 22161. Th-e toll-free number is- 800-553-6847. Copies- may be inspected at -EPA's Drinking Water -Docket, 401 M Street,- SW., Washington, DC -20460; or at the Nati-onal Archives and Rec-ords Administration (-NARA). For informatio-n on the availability- of this material at -NARA, call 202-741-60-30, or go to:

[http://www.archives.gov/federal\\_register/c-ode\\_of\\_federal\\_regula-tions/ibr\\_locations.h-tml](http://www.archives.gov/federal_register/c-ode_of_federal_regula-tions/ibr_locations.h-tml). If two or more radi-onuclides are present-, the sum of their an-nual dose equivalent -to the total body or -to any organ shall no-t exceed 4 mrem/year.

Table A - Average Ann-ual Concentrations As-sumed To Produce: a T-otal Body or Organ Do-se of 4 mrem/yr

1. Radionuclide Criti-cal organ pCi per lit-er

2. Tritium Total body- 20,000

3. Strontium-90 Bone -Marrow 8

(e) MCL for uranium. -The maximum contamin-ant level for uranium -is 30 µg/L.

Reference [2]-: Definitions from Appe-ndix B & pg. 64; 2017- PAG Manual EPA-400/R--17/001 -

(1) Protective Action Gui-de (PAG): The projected dose to- an individual, resul-ting from a radiologi-cal incident at which- a specific protectiv-e action to reduce or- avoid that dose is w-arranted.

(2) Derived Response Leve-l (DRL): A level of radioactiv-ity in an environmen-tal medium that would -be expected to produc-e a dose equal to its- corresponding Protec-tive Action Guide.

(3) Maximum Contaminant L-evel (MCL): An enforceable standa-rd established to pro-tect the public again-st consumption ``of -drinking water contam-inants that present a- risk to human health-. A MCL is the maximu-m allowable amount of- a contaminant in dri-inking water that is d-elivered to the consu-mer.

(4) Effective dose: -The sum of organ equi-valent doses weighte-d- by ICRP organ weight-ing factors.

(5) DCFia:- The dose conversion -factor (also referre-d- to as dose coefficie-nt) for the ingestion- of radionuclide i- in drinking water an-d age group a- (in mrem/pCi or Sv/p-Ci, or mrem/Bq or Sv/-Bq). See below for gu-idance on dose conver-sion factors (DCFs).

(6) Sievert (Sv): -International unit of- equivalent dose. One- sievert equals = 100- rem [=1 Joule/kg].

(7) Effective dose: -The sum of organ equi-valent doses weighte-d- by ICRP organ weight-ing factors.

Dose: -The amount of radiati-on exposure a person -has received, calcula-ted considering the e-ffectiveness of the r-adiation type (alpha,- beta, gamma), the ti-me-frame of the exposu-re, and the sensitivi-ty of the person or i-individual organs.

(8) Committed effective d-ose: The sum of the commit-ted equivalent doses -following intake (inh-alation or ingestion)- of a radionuclide to-each organ multiplie-d by a tissue weighti-ng factor.

-

-

**From:** [Brent Ranalli](#)  
**To:** [Hernandez-Quinones, Samuel](#)  
**Cc:** [Jonathan.Koplos\\_cadmusgroup.com](#)  
**Subject:** Memo - Drinking Water PAGs Based on Doses to Critical Organs - 4-30-15docx.docx  
**Date:** Thursday, April 30, 2015 5:00:58 PM  
**Attachments:** [Memo - Drinking Water PAGs Based on Doses to Critical Organs - 4-30-15docx.docx](#)

---

Hi Sam,

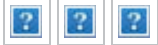
Here is the memo with an approach for using critical organs as the basis for PAGs, with a discussion of pros and cons and a list of critical organs and dose and risk coefficients for the list of 50+ isotopes you provided.

All best,

Brent



Follow us on social media:



## Discussion of Drinking Water PAGs Based on Doses to Critical Organs as Opposed to Effective Whole Body Dose Commitment

SC&A and The Cadmus Group

April 30, 2015

EPA's Office of Water is currently researching strategies for developing Protective Action Guides (PAGs) and associated Derived Response Levels (DRLs) for drinking water. Specifically, the Agency recognizes a short-term emergency drinking water guide may be useful for public health protection in light of the Fukushima nuclear power plant accident, which impacted some Japanese drinking water supplies. One of the issues under consideration by the EPA is whether PAGs and DRLs for drinking water should take into consideration the critical organ. For example, the EPA is currently considering establishing separate drinking water PAGs and associated DRLs for children and adults using dose conversion factors and daily drinking water rates as set forth in Federal Guidance Report No. 13 (FRG-13). Consideration is being given to establishing PAGs of 500 mrem and 100 mrem effective dose commitment for adults and children, respectively. However, it is recognized that certain radionuclides concentrate in specific organs, such as Sr-90 in bone and I-131 in the thyroid gland. The Food and Drug Administration recognizes the importance of radionuclides that seek out and concentrate in specific organs and provides guidance with respect to these issues as applied to the PAGs for food.<sup>1</sup> In summary the food PAGs are as follows:

*The PAGs are 5 mSv (0.5 rem) for committed effective dose equivalent or 50 mSv (5 rem) committed dose equivalent to an individual tissue or organ, whichever is more limiting.*

This approach takes into consideration that the doses to some organs from the ingestion of some radionuclides could be considerably higher than the effective whole body dose.

Should the Office of Water consider establishing selected organ specific PAGs for drinking water, one defensible strategy that can be used to derive organ-specific PAGs would involve the following steps:

1. Establish benchmark values for the lifetime risk of cancer associated with 100 mrem for children and 500 mrem for adults.

---

<sup>1</sup> Food and Drug Administration (FDA). 1998. Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies. Radiation Programs Branch, Division of Mammography Quality and Radiation Programs, Office of Health and Industry Programs. August 13, 1998

2. Determine the doses to particular organs that would be associated with the equivalent risk. These would then represent the PAGs for particular organs.
3. Identify the radionuclides that might require organ specific PAGs because they tend to concentrate in specific organs.
4. Calculate DRLs for those radionuclides for children and adults.

This memo presents two example of how this might be done, and discusses the pros and cons of the approach.

## 1.0 Cancer Risk Coefficients

Using the EPA Revised Blue Book<sup>2</sup>, the cancer incidence coefficient for uniform whole body dose to low level radiation to a reference stationary population distribution (defined the 2000 U.S. vital statistics) is about 0.1 risk per rem effective dose. A more precise estimate of the risk coefficient for a reference population, in units of risk per Gray (Gy<sup>-1</sup>), is provided in Table 1.<sup>3</sup>

**Table 1. Cancer Risks for a Reference U.S. Population (Gy<sup>-1</sup>)**

	Whole Population		F males	Females
	mean	90% CI	mean	mean
Morbidity	0.116	0.056-0.213	0.135	0.055
Mortality	0.058	0.028-0.10	0.0689	0.0469

Source: EPA Blue Book, pp. 2-3

The implications are that if 10,000 people in a standard U.S. population experienced a uniform whole body low linear energy transfer exposure of 500 mrem, 5 people would be expected to develop a radiogenic cancer over the course of the population's life expectancy.

The EPA revised Blue Book explains that *radiogenic risks for childhood exposures are of special interest. Doses received from ingestion or inhalation are often larger for children than adults, and the risks per unit dose are substantially larger for exposures during childhood (here defined as the time period ending at the 15th birthday) than from exposures later in life.* Table 2 presents the cancer risk coefficients for children, which appear to be about twice those for adults.

<sup>2</sup> EPA Radiogenic Cancer Risk Models and Projections for the United States, EPA 402-R-11-001, U.S. Environmental protection Agency, Office of Radiation and Indoor Air. April 2011

<sup>3</sup> The conversion from risk per Gray (as found in the revised Blue Book) to risk per rem is performed on the assumption that 1 Gray = 100 rem. This equivalence holds for beta and gamma radiation. The case of alpha emitters is more complicated. For simplicity's sake, for the purpose of this memo, simple equivalence is assumed.

**Table 2. Cancer Risks for Children (under 15 years, (Gy<sup>-1</sup>)**

	Females	90% CI	Males	90% CI
Morbidity	0.33	0.12-0.55	0.2	0.077-0.36
Mortality	0.15	--	0.085	--

Source: EPA Blue Book, p. 3

The revised Blue Book explains that there is generally much more uncertainty in the estimated risks from childhood exposures than in the risks for the entire population. A-bomb survivors who were children at the time of the bombings (ATB) still have substantial years of life remaining in which cancers are to be expressed. Further follow-up will provide more statistical precision and greater clarity as to how these risks vary many decades after the exposure. The implications of these risk coefficients are that if 10,000 children in a standard U.S. population experienced a uniform whole body low line energy transfer exposure of 100 mrem, between 2 and 3.3 children would be expected to develop a radiogenic cancer over the course of the population's life expectancy. Of course the uncertainties are high, the values differ somewhat between males and females, and, among children the risks would be higher for younger children.

## **2.0 Adult Doses to Critical Organs that Would Be Associated with a Lifetime Morbidity Risk of 5E-4**

For simplicity, let us assume a lifetime risk coefficient of 0.001 total cancer risk per rem uniform whole body exposure for adults. Hence, a PAG for adults of 500 mrem effective dose would be associated with an individual lifetime excess total cancer risk of about 5E-4. Let us next assume that we would like to determine the I-131 and Sr-90 exposure to the limiting organs that would be equivalent to a lifetime cancer risk of 5E-4. In the following sections, we explore how one would derive PAGs and associated DRLs using the critical organ approach.

### **2.1 I-131**

As can be seen in Appendix A, the limiting adult dose conversion factor for I-131 is 4.32E-7 Sv/Bq for the thyroid, and the limiting adult risk coefficient is 4.39E-10 risk/Bq for thyroid cancer. The organ specific PAG for thyroid cancer associated with the ingestion of I-131 in water would be derived as follows:

$$\text{Thyroid Cancer: } 4.39\text{E-}10 \text{ risk/Bq} \times 4.32\text{E-}7 \text{ Sv/Bq} = 1.02\text{E-}3 \text{ risk per Sv}$$

The dose to the thyroid gland that would result in a lifetime risk of cancer of 5E-4 is as follows:

$$\text{Thyroid Cancer: } 5\text{E-}4 \text{ risk} \div 1.02\text{E-}3 \text{ risk/Sv} = 0.490 \text{ Sv or 49,000 mrem}$$

Hence, if one were interested in establishing an I-131 PAG based on critical organ, with the same lifetime risk of cancer to that organ as an effective whole body dose of 500 mrem, the PAG would be 49,000 mrem to the thyroid; i.e., 98 times higher than the whole body dose.

The DRL is calculated as follows:

$$\text{DRL}_{\text{organ}} = \text{PAG}_{\text{organ}} / [\text{Ingestion rate} \times 365 \text{ days} \times \text{DCF}_{\text{organ}}]$$

For easy comparison with the whole-body DRL in the draft PAG chapter, we apply the same drinking water ingestion rate that is used there: 1.643 L/day for 50 year old males.

$$\text{Thyroid Cancer: DRL} = 0.490 \text{ Sv} / [1.643 \text{ L/d} \times 365 \text{ d} \times 4.32\text{E-}7 \text{ Sv/Bq}] = 1,891 \text{ Bq/L}$$

This DRL for thyroid cancer is equivalent to 51,100pCi/L, which is less protective than the parallel whole-body DRL of 10,384 pCi/L.

## 2.2 Sr-90

In Appendix A, we see that the limiting adult dose coefficient is 4.09E-7 Sv/Bq for bone surface and the limiting risk coefficient for the ingestion of Sr-90 is 9.48E-10 lifetime risk of leukemia (which is primarily due to exposure of red bone marrow) per Bq of Sr-90 ingested. In order to determine which organ should be considered the "critical" organ, we calculate results for both. From the FGR-13 software version 2.13 (the source of the summary information in Appendix A) we find that the dose coefficient for red bone marrow is 1.79E-7 Sv/Bq and the risk coefficient for bone cancer is 3.98E-11 risk/Bq. Using both approaches, we obtain the following:

$$\text{Leukemia: } 9.48\text{E-}10 \text{ risk/Bq} = 1.79\text{E-}7 \text{ Sv/Bq} = 5.30\text{E-}3 \text{ risk per Sv}$$

$$\text{Bone Cancer: } 3.98\text{E-}11 \text{ risk/Bq} = 4.09\text{E-}7 \text{ Sv/Bq} = 9.73\text{E-}5 \text{ risk per Sv}$$

Clearly, the risk per Sv is much higher for exposure to the red bone marrow, even though the dose coefficient for bone surface is higher than for bone marrow. Hence in this case, it would seem that a critical organ-based PAG for Sr-90 ingestion would be based on exposure to red bone marrow.

Organ-specific PAGs associated with a lifetime risk of cancer of 5E-4 would be calculated as follows:

$$\text{Leukemia: } 5\text{E-}4 \text{ risk} = 5.30\text{E-}3 \text{ risk/Sv} = 9.43\text{E-}2 \text{ Sv or } 9,430 \text{ mrem}$$

$$\text{Bone Cancer: } 5\text{E-}4 \text{ risk} = 9.73\text{E-}5 \text{ risk/Sv} = 5.14 \text{ Sv or } 514,000 \text{ mrem}$$

Hence, if one were interested in establishing a Sr-90 PAG based on critical organ, one would use red bone marrow, which is associated with the same lifetime risk of cancer as the effective whole body dose 500 mrem, and the PAG would be 9,430 mrem to red bone marrow, instead of 500 mrem effective whole body dose; i.e., about 19 times higher.

DRLs would be calculated as follows (using the 20-year-old male drinking water ingestion rate of 1.137 L/day, as per the draft PAG chapter):

Leukemia:  $\text{DRL} = 9.43\text{E-}2 \text{ Sv} / [1.137 \text{ L/d} \times 365 \text{ d} \times 1.79\text{E-}7 \text{ Sv/Bq}] = 1,270 \text{ Bq/L}$

Bone Cancer:  $\text{DRL} = 5.14 \text{ Sv} / [1.137 \text{ L/d} \times 365 \text{ d} \times 4.09\text{E-}7 \text{ Sv/Bq}] = 30,300 \text{ Bq/L}$

These DRLs are equivalent to 34,300 pCi/L (leukemia) and 818,000 pCi/L (bone cancer). The leukemia DRL is about twenty-four times more protective than the bone cancer DRL, but still about five times less protective than the whole-body DRL of 6,743 pCi/L in the draft PAG chapter.

Note that the DRL of 6,743 pCi/L in the draft PAG chapter is not for Sr-90 alone, but for Sr-90 and its decay product Y-90 together. Sr-90 normally occurs in environmental media accompanied by Y-90 in a stable ratio. There are two ways in which the risk posed by Y-90 could be taken into account. One is to calculate a separate PAG for Y-90. In this case, as in the case of Sr-90, we find that the critical organs for dose and risk do not match up. The limiting DCF for Y-90 is  $3.15\text{E-}08$  for the wall of the lower large intestine, while the limiting risk coefficient for Y-90 is a  $1.08\text{E-}10$  risk of colon cancer. Here we encounter an additional complication: the menu of options for DCF does not include the colon as a target organ, and the menu of options for risk coefficient does not include cancer of the large intestine. So there is no straightforward way to determine whether a PAG for the colon or the large intestine is more limiting (or indeed to derive an organ-specific PAG at all for either organ).

Another way to handle the Y-90 that is expected to co-occur with Sr-90 in water is to calculate a single PAG by summing their respective dose and risk coefficients for a single selected target organ (e.g., for bone cancer or leukemia). As it happens, the bone surface dose coefficient for Y-90 and the leukemia risk coefficient for Y-90 are so minute that they add nothing (when taken to three decimal places) to the total dose and risk of combined Sr-90 and Y-90. Thus the PAG for combined Sr-90 and Y-90 is identical to the PAG for Sr-90, and the contribution of environmental Y-90 to public health risk becomes invisible.

### 3.0 Discussion

The critical-organ-specific approach enables policy-makers to focus on risks to particular organs. However, there are several drawbacks and difficulties associated with this approach. One problem with an organ-based PAG is that while a radionuclide may preferentially dose an organ, it does not only dose that one organ. All of the other organs of the body receive a dose as well. As seen in the examples above, the I-131 DRL based on risk to the thyroid is less protective than the DRL based on equivalent risk to the whole body, and the Sr-90 (or Sr-90/Y-90) DRL based on risk of leukemia is less protective than the DRL based on equivalent risk to the whole body. In either case, if the organ-specific PAG is used, the total risk to that individual would exceed the lifetime limit.<sup>4</sup> This problem could potentially be addressed by adjusting the allowable organ

---

<sup>4</sup> For instance, in order to receive a dose of 0.490 Sv of I-131 to the thyroid gland, an individual would need to ingest  $1.13\text{E}+6 \text{ Bq}$  of I-131 (i.e.,  $0.490 \text{ Sv} = 4.32\text{E-}7 \text{ Sv/Bq} \times 1.13\text{E}+6 \text{ Bq}$ ). In addition to giving a dose to the



specific lifetime risk limit downward, so that an individual's total risk would not exceed  $5E-4$ . Options for such adjustment could be discussed.

Regardless of the risk threshold chosen as the basis for an organ-specific PAG, establishing risk-based PAGs to critical organs presents technical challenges. One is that it is not always a straightforward matter to select the target organ. In the case of I-131, the same organ (thyroid) was associated with the highest risk coefficient and the highest dose coefficient. In the case of Sr-90, on the other hand, the highest risk coefficient belonged to leukemia (due to radiation to bone marrow) and the highest dose coefficient belonged to the bone surface (associated with risk of bone cancer). PAGs for both organs needed to be calculated to determine which organ was most limiting. In the case of Y-90, the critical organs for dose and risk were not only mismatched, but the authoritative look-up tables did not provide both dose and risk values, and so did not permit calculation of PAGs for these organs. In Appendix A, it can be seen that many of the radionuclides of interest, like Sr-90, have mismatched critical organs, and a fair number of these radionuclides, like Y-90, have critical organs (e.g., upper large intestine, lower large intestine, colon) that appear in only dose or risk look-up tables but not both. (A complete list of organs from the two sets of look up tables, showing the extent of compatibility between the tables, appears in Appendix B.)

Another technical challenge, as we have seen in the case of Sr-90 and Y-90, is that PAGs for multiple isotopes cannot be summed in a straightforward manner if the critical organs are different. In the case of parent and daughter radionuclides that are expected to occur together in the environment like Sr-90 and Y-90, normal practice is to combine their dose coefficients and risk coefficients and treat them like one chemical. As we have seen, use of the limiting Sr-90 organ for combined Sr-90/Y-90 results in Y-90 contributing nothing to the resulting PAG and DRL.

All factors taken into consideration, it appears that PAGs based on committed effective whole body dose, as compared to critical organ committed equivalent, are more protective, and the DRLs can be derived in a more straightforward manner.

---

thyroid, the ingested I 131 would result in a whole body dose. The FGR-13 effective whole body dose equivalent for ingestion of I 131 is  $2.18E-8$  Sv/Bq, so the whole body dose would be 0.025 Sv, or 2,500 mrem—about five times what the whole-body-based PAG would allow.



## Appendix A

Comparison of Dose Conversion Factors and Risk Coefficients

1	2	3	4	5	6	7
Isotope	Dose Conversion Factor (DCF) for Adults (Sv per Bq ingested in drinking water)			Risk Coefficient for Adults Age 25-70 (risk per Bq ingested in drinking water)		
	Whole Body DCF	Critical Organ (highest organ-specific DCF)	Critical Organ DCF	Whole Body Risk Coefficient	Critical Organ (highest organ risk coefficient)	Critical Organ Risk Coefficient
Sr-90/Y-90 <sup>1</sup>	3.04E-08	Bone Surface	4.09E-07	1.19E-09	Leukemia (Trabecular Bone)	9.48E-10
Cs-137	1.36E-08	LLI Wall	1.67E-08	6.02E-10	Residual	1.27E-10
I-131	2.18E-08	Thyroid	4.32E-07	4.47E-10	Thyroid	4.39E-10
Ba-140	2.60E-09	LLI Wall	2.6E-08	1.04E-10	Colon	8.67E-11
Ba-141	6.99E-11	Stomach Wall	5E-10	1.79E-12	Colon	8.81E-13
Ba-142	3.53E-11	Stomach Wall	2.03E-10	78E-13	Stomach	4.21E-13
Ce-141	7.11E-10	LLI Wall	8.7E-09	2.1E-11	Colon	2.76E-11
Ce-143	1.12E-09	LLI Wall	1.16E-08	4.44E-11	Colon	4.21E-11
Ce-144	5.23E-09	LLI Wall	6.66E-08	2.16E-10	Colon	2.10E-10
Co-58	7.49E-10	LLI Wall	3.99E-09	2.65E-11	Colon	1.43E-11
Co-58m	2.41E-11	LLI Wall	1.67E-10	9.7E-13	Colon	7.93E-13
Cs-134	1.92E-08	LLI Wall	2.26E-08	8.51E-10	Residual	1.86E-10
Cs-134m	2.01E-11	Stomach Wall	1.15E-10	5.45E-13	Stomach	2.39E-13
Cs-137	1.36E-08	LLI Wall	1.67E-08	6.02E-10	Residual	1.27E-10
Cs-138	9.19E-11	Stomach Wall	7.04E-10	1.91E-12	Stomach	1.46E-12
I-131	2.18E-08	Thyroid	4.32E-07	4.47E-10	Thyroid	4.39E-10
I-133	4.28E-09	Thyroid	8.23E-08	1.35E-10	Thyroid	1.26E-10
I-134	1.08E-10	Stomach Wall	5.51E-10	3.02E-12	Stomach	1.14E-12

1	2	3	4	5	6	7
Isotope	Dose Conversion Factor (DCF) for Adults (Sv per Bq ingested in drinking water)			Risk Coefficient for Adults Age 25-70 (risk per Bq ingested in drinking water)		
	Whole Body DCF	Critical Organ (highest organ-specific DCF)	Critical Organ DCF	Whole Body Risk Coefficient	Critical Organ (highest organ risk coefficient)	Critical Organ Risk Coefficient
I-135	9.35E-10	Thyroid	1.60E-08	3.08E-11	Thyroid	2.44E-11
La-141	3.58E-10	ULI Wall	2.49E-09	1.22E-11	Colon	1.02E-11
La-142	1.82E-10	Stomach Wall	8.50E-10	4.95E-12	Colon	2.41E-12
Mn-54	7.22E-10	LLI Wall	2.44E-09	2.68E-11	Colon	9.49E-12
Mn-56	2.56E-10	ULI Wall	1.36E-09	7.79E-12	Colon	5.06E-12
Mo-99	6.05E-10	Kidneys	3.10E-09	2.41E-11	Liver	4.62E-12
Mo-101	4.15E-11	Stomach Wall	25E-10	8.83E-13	Stomach	6.76E-13
Nb-95	5.88E-10	LLI Wall	4.04E-09	2.01E-11	Colon	1.41E-11
Rb-89	4.68E-11	Stomach Wall	3.63E-10	9.58E-13	Stomach	7.55E-13
Ru-103	7.34E-10	LLI Wall	61E-0	2.80E-11	Colon	2.18E-11
Ru-106	7.01E-09	LLI Wall	7.8E-8	2.92E-10	Colon	2.30E-10
Sb-128 <sup>2</sup>	7.63E-10	ULI Wall	3.95E-09	2.6E-11	Colon	1.92E-11
Sb-129	4.23E-10	ULI Wall	2.7E-09	1.51E-11	Colon	1.22E-11
Sb-130	9.19E-11	Stomach Wall	5.74E-10	2.19E-11	Stomach	1.19E-12
Sb-131	1.03E-10	Thyroid	7.07E-10	2.58E-12	Thyroid	1.08E-12
Sn-128	1.55E-10	Stomach Wall	8.37E-10	3.90E-12	Stomach	1.74E-12
Sr-89	2.57E-09	LLI Wall	2.22E-08	1.7E-10	Colon	7.06E-11
Sr-90	2.77E-08	Bone Surface	4.09E-07	1.08E-09	Leukemia (Trabecular Bone)	9.48E-10
Sr-91	6.50E-10	LLI Wall	3.97E-09	2.44E-11	Colon	1.94E-11
Sr-92	4.26E-10	ULI Wall	3.07E-09	1.64E-11	Colon	1.36E-11
Tc-101	1.88E-11	Stomach Wall	1.50E-10	3.52E-13	Stomach	3.11E-13
Tc-104	8.01E-11	Stomach Wall	6.21E-10	1.56E-12	Stomach	1.29E-12
Te-131	8.75E-11	Thyroid	8.91E-10	2.20E-12	Thyroid	1.36E-12
Te-131m	1.95E-09	Thyroid	1.85E-08	6.75E-11	Colon	3.00E-11

1	2	3	4	5	6	7
Isotope	Dose Conversion Factor (DCF) for Adults (Sv per Bq ingested in drinking water)			Risk Coefficient for Adults Age 25-70 (risk per Bq ingested in drinking water)		
	Whole Body DCF	Critical Organ (highest organ-specific DCF)	Critical Organ DCF	Whole Body Risk Coefficient	Critical Organ (highest organ risk coefficient)	Critical Organ Risk Coefficient
Te-132	3.81E-09	Thyroid	3.11E-08	1.43E-10	Colon	6.36E-11
Te-133	7.24E-11	Thyroid	8.14E-10	1.91E-12	Thyroid	1.24E-12
Te-133m	2.83E-10	Thyroid	3.22E-09	8.18E-12	Thyroid	4.91E-12
Te-134	1.08E-10	Thyroid	5.26E-10	3.24E-12	Stomach	9.30E-13
Y-91	2.37E-09	LLI Wall	3.03E-08	9.74E-11	Colon	9.59E-11
Y-92	4.95E-10	ULI Wall	3.34E-09	1.64E-11	Colon	1.33E-11
Y-93	1.15E-09	LLI Wall	75E-09	4.46E-11	Colon	4.18E-11
Y-94	8.15E-11	Stomach Wall	6.42E-10	1.54E-12	Stomach	1.33E-12
Y-95	4.63E-11	Stomach Wall	3.75E-10	8.43E-13	Stomach	7.80E-13
Zr-95	9.61E-10	LLI Wall	83E-0	3.53E-11	Colon	2.60E-11
Zr-97	2.07E-09	LLI Wall	1.78E-8	8.03E-11	Colon	7.37E-11
Sr-90	2.77E-08	Bone Surface	4.09E-07	1.08E-09	Leukemia (Trabecular Bone)	9.48E-10
Y-90	2.69E-09	LLI Wall	3.15E-8	1.10E-10	Colon	1.08E-10

Source: FGR-13 software, version 2.1.13. This is the same version used in development of the draft PAG chapter 13. For an explanation of abbreviations, see Appendix B.

<sup>1</sup> For combined Sr-90 and Y-90, the contribution of both Sr-90 and Y-90 to the critical organ of Sr-90 is summed. The contribution of Y-90 turns out to be negligible.

<sup>2</sup> The FGR-13 software has two listings for Sb-128, with half lives of 10.4 minutes and 9.01 hours. The listing with the longer half-life was selected for the purpose of this table.

## Appendix B

### Target Organs Listed in Dose and Risk Lookup Tables from FGR-13

Organs In Dose Tables	Organs (Cancer Types) In Risk Tables
Adrenals	
B_Surface (bone surface)	Bone
Brain	
Breast	Breast
St_Wall (stomach wall)	Stomach
SI_Wall (small intestine wall)	
ULI_Wall (upper large intestine wall)	
LLI_Wall (lower large intestine wall)	
Kidneys	Kidney
Liver	Liver
ET-Region (extrathoracic region)	
Lung	Lung
Muscle	
Ovaries	Ovary
Pancreas	
R_Marrow (red bone marrow)	Leukemia (trabecular bone)
Skin	Skin
Spleen	
Testes	
Thymus	
Thyroid	Thyroid
Uterus	
UB_Wall (urinary bladder wall)	Bladder
	Colon
	Esophagus
	Residual

Source: FGR-13 software, version 2.1.13

## Explanation of Spreadsheet and Chart Comparing 500 mrem/yr DRL Concentrations to MCL

There is an Excel Spreadsheet and Stacked Column Chart provided.

1. In general they are sorted by Radionuclide, in the order provided in the OW table for the 4 mrem/yr MCL concentrations with concentrations added for some of the gross alpha 15 pCi/l MCL, the 5 pCi/l Radium 226 and 228 MCL, and the some of the uranium isotopes converted to the 30 microgram per liter total uranium MCL
2. If no PAG DRL was provided in 2007 and 2015/2016 draft PAG the radionuclide is not included in the Chart (zero values will not work in a logarithmic Excel chart)
3. Y-90 was deleted from the Chart since it was the only DRL to decrease from 2007 to 2015/2016 (negative values will not work in a logarithmic Excel chart)
4. Since 3 of the 5 radionuclides listed in both the 2007 and 2015/2016 PAGs had a 22 increase in DRL concentrations (of the other two one had a decrease and the other a 12 increase), an increase of 22 was assumed for the other 2007 radionuclides in the Chart to represent 2015/2016 concentrations (it is likely this is the result of reducing the water ingestion rates from 2 liters to 1.643 liters per day)

### **Rationale for Comparison to MCL:**

The CERCLA policy most analogous to the linking with PAG would be the Regional Removal Management Levels (RMLs) User Guide which discusses when short-term risks from chemically contaminated drinking water wells are high enough to warrant providing alternative (replacement) drinking water supplies. Although exceeding an MCL does not trigger a removal action, once the Agency has determined the need for a removal action under CERCLA, typically MCLs should be attained to the extent practicable during the removal action considering the exigencies of the situation.

Following are citations of information in the spreadsheet and chart.

### **DRLs and Source:**

- 2007 PAG DRLs are provided in Table 4.1 of August 2007 internal review draft of Protective Action Guidance for Radiological Incidents. The DRLs without radioactive decay listed in 2007 that were most similar to those provided during the 2015 review and in the 2015 version of the PAGs
- 2015 PAG DRLs provided in spreadsheet attached to June 29, 2015 email from Samuel Hernandez-Quinones to Michael Scozzafava and Sara DeCair.

### MCLs info Source:

- MCLs from OW webpage for 4 mrem/yr MCL, and OSWER directive □ Use of Uranium Drinking Water Standards under 40 CFR 141 and 40 CFR 192 as Remediation Goals for Groundwater at CERCLA sites □ which includes a list of radionuclides covered by 15 pCi/l gross alpha MCL (list provided by OW).
- Uranium MCLs are in terms of mass (micrograms per liter), not activity (picoCuries per liter). The 30 micrograms per liter MCL for the uranium element was converted to an activity for each isotope

### Comparison of DRL to MCL

- Shows by a factor of □ how much DRL is greater than MCL concentration. The **values** in the bullets below are represented on the stacked column chart by horizontal lines
- What this means
  - if value is **70**, then **1 year** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
  - if value is **840**, then **1 month** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
  - if value is **3,650** then **1 week** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
  - if value is **25,550**, then **1 day** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
    - For example drinking less than one day at the daily rate of 2 liters of Ca-45 at the DRL concentration would result in an exposure that corresponds to drinking liters of water per day for 70 years at the MCL level.

Radionuclide	MCL	500 mrem/yr		500 mrem/yr		500 mrem/yr		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL		Multiple of MCL	
--------------	-----	-------------	--	-------------	--	-------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--	-----------------	--

Sr-90	8	6,730	6,650	7,415	841	831	927	1.12	927 Sr-90	831	96	927	96
Sr-91	200			346,676	-	-	1,733		1,733 Sr-91	-	1,733	1,733	1,733
Sr-92	200			528,966	-	-	2,645		2,645 Sr-92	-	2,645	2,645	2,645
Y-90	60	6,530,000	68,800	7,415	108,833	1,147	124		124 Y-90	1,147	(1,023)	124	(1,023)
Y-91	90	34,100	78,100	95,080	379	868	1,056	1.22	1,056 Y-91	868	188	1,056	188
Y-91m	9,000				-	-	-		- Y-91	-	-	-	-
Y-92	200			455,231	-	-	2,276		2,276 Y-9	-	2,276	2,276	2,276
Y-93	90			195,947	-	-	2,177		2,177 Y-93	-	2,177	2,177	2,177
Zr-93	2,000	167,000	167,000	84	84	84	-		1 Y-93	84	18	102	18
Zr-95	200	773,000	192,000	234,484	3,865	960	1,172	1.22	1,172 Zr-95	960	212	1,172	212
Zr-97	60			108,860	-	-	1,814		1,814 Zr-9	-	1,814	1,814	1,814
Nb-93m	1,000				-	-	-		- Nb-93m	-	-	-	-
Nb-95	300	2,260,000	314,000	7,533	1,047	1,047	-		1,277 Nb-95	1,047	230	1,277	230
Nb-97	3,000				-	-	-		- Nb-97	-	112	622	112
Mo-99	600	28,100,000	306,000	46,833	510	510	-		622 Mo-99	510	-	-	-
Tc-96	300				-	-	-		- Tc-96	-	-	-	-
Tc-96m	30,000				-	-	-		- Tc-96m	-	-	-	-
Tc-97	6,000				-	-	-		- Tc-97	-	-	-	-
Tc-97m	1,000				-	-	-		- Tc-97m	-	-	-	-
Tc-99	900	288,000	288,000	320	320	320	-		390 Tc-99	320	70	390	70
Tc-99m	20,000				-	-	-		- Tc-99m	-	-	-	-
Ru-97	1,000				-	-	-		- Ru-97	-	-	-	-
Ru-103	200	1,620,000	252,000	8,100	1,260	1,260	-		1,537 Ru-103	1,260	277	1,537	277
Ru-105	200				-	-	-		- Ru-105	-	-	-	-
Ru-106	30	36,500	26,400	1,217	880	880	-		1,074 Ru-106	880	194	1,074	194
Rh-103m	30,000				-	-	-		- Rh-103m	-	-	-	-
Rh-105	300				-	-	-		- Rh-105	-	-	-	-
Pd-103	900				-	-	-		- Pd-103	-	-	-	-
Pd-109	300				-	-	-		- Pd-109	-	-	-	-
Ag-105	300				-	-	-		- Ag-105	-	-	-	-
Ag-110m	90	106,000	66,500	1,009	739	739	-		901 Ag-110m	739	163	901	163
Ag-111	100				-	-	-		- Ag-111	-	-	-	-
Cd-109	600	120,000	92,600	200	154	154	-		188 Cd-109	154	34	188	34
Cd-115	90				-	-	-		- Cd-115	-	-	-	-
Cd-115m	90				-	-	-		- Cd-115m	-	-	-	-
In-113m	3,000				-	-	-		- In-113m	-	-	-	-
In-114m	60	233,000	45,400	3,883	757	757	-		923 In-114m	757	166	923	166
In-115	300				-	-	-		- In-115	-	-	-	-
In-115m	1,000				-	-	-		- In-115m	-	-	-	-
Sn-113	300	620,000	251,000	20	837	837	-		1,021 Sn-113	837	184	1,021	184
Sn-125	60	1,580,000	60,000	26,333	1,002	1,002	-		1,222 Sn-125	1,002	220	1,222	220
Sb-122	90				-	-	-		- Sb-122	-	-	-	-
Sb-124	60	311,000	72,900	5,183	1,215	1,215	-		1,482 Sb-124	1,215	267	1,482	267
Sb-125	300				-	-	-		- Sb-125	-	-	-	-
Te-125m	600				-	-	-		- Te-125m	-	-	-	-
Te-127	900	712,000,000	1,100,000	7,011	1,222	1,222	-		1,491 Te-127	1,222	269	1,491	269
Te-127m	200				-	-	-		- Te-127m	-	-	-	-
Te-129	2,000	15,300,000,000	2,940,000	650,000	1,470	1,470	-		1,793 Te-129	1,470	323	1,793	323
Te-129m	90	468,000		5,200	475	475	-		- Te-129m	-	-	-	-
Te-131m	200	19,200,000	94,900	115,559	96,000	96,000	578	1.22	578 Te-131m	475	104	578	104
Te-132	90	3,780,000	48,600	59,144	42,000	540	657	1.22	657 Te-132	540	117	657	117
I-126	3				-	-	-		- I-126	-	-	-	-
I-129	1	1,750		1,750	-	-	-		- I-129	-	-	-	-



I-131	3	267,000	8,480	10,337	89,000	2,827	3,446	1.22	3,446	I-131	2,827	619	3,446	619
I-132	90				-	-	-		-	- I-132	-	-	-	-
I-133	10				-	-	-		-	- I-133	-	-	-	-
I-134	100				-	-	-		-	- I-134	-	-	-	-
I-135	30				-	-	-		-	- I-135	-	-	-	-
Cs-131	20,000				-	-	-		-	- Cs-131	-	-	-	-
Cs-134	80	11,300			141	-	-		-	- Cs-134	-	-	-	-
Cs-134m	20,000				-	-	-		-	- Cs-134m	-	-	-	-
Cs-135	900				-	-	-		-	- Cs-135	-	-	-	-
Cs-136	800	1,160,000			1,450	-	-		-	- Cs-136	-	-	-	-
Cs-137	200	13,800	13,600	16,569	69	68	83	1.22	83	- Cs-137	68	15	83	15
Ba-131	600				-	-	-		-	- Ba-131	-	-	-	-
Ba-140	90	1,410,000	71,200		15,667	791	-		-	- Ba-140	791	174	965	174
La-140	60	13,800,000	91,600		230,000	1,527	-		-	- La-140	1,527	336	1,863	336
Ce-141	300	2,030,000	260,000		6,767	867	-		-	- Ce-141	867	191	1,057	191
Ce-143	100	30,400,000	165,000		304,000	1,650	-		-	- Ce-143	1,650	363	2,013	363
Ce-144	30	53,300	35,300		1,777	1,177	-		-	- Ce-144	1,177	259	1,436	259
Pr-142	90				-	-	-		-	- Pr-142	-	-	-	-
Pr-143	100				-	-	-		-	- Pr-143	-	-	-	-
Nd-144	15				-	-	-		-	- Nd-144	-	-	-	-
Nd-147	200	3,940,000	171,000		19,700	855	-		-	- Nd-147	855	188	1,043	188
Nd-149	900				-	-	-		-	- Nd-149	-	-	-	-
Pm-147	600	807,000	709,000		1,345	1,182	-		-	- Pm-147	1,182	260	1,442	260
Pm-149	100	21,300,000	186,000		213,000	1,860	-		-	- Pm-149	1,860	409	2,269	409
Sm-147	15				-	-	-		-	- Sm-147	-	-	-	-
Sm-148	15				-	-	-		-	- Sm-148	-	-	-	-
Sm-151	1,000	1,890,000	1,890,000		1,890	1,890	-		-	- Sm-151	1,890	416	2,306	416
Sm-153	200				-	-	-		-	- Sm-153	-	-	-	-
Eu-152	200	139,000	135,000		695	675	-		-	- Eu-152	675	149	824	149
Eu-154	60	94,300	90,700		1,572	2	-		-	- Eu-154	1,512	333	1,844	333
Eu-155	600	607,000	566,000		1,151	3	-		-	- Eu-155	943	208	1,151	208
Gd-153	600	1,070,000	665,000		83	08	-		-	- Gd-153	1,108	244	1,352	244
Gd-159	200				-	-	-		-	- Gd-159	-	-	-	-
Tb-160	100	415,000	115,000		0	1,150	-		-	- Tb-160	1,150	253	1,403	253
Dy-165	1,000				-	-	-		-	- Dy-165	-	-	-	-
Dy-166	100				-	-	-		-	- Dy-166	-	-	-	-
Ho-166	90	93,500	93,400		1,039	1,038	-		-	- Ho-166	1,038	228	1,266	228
Er-169	300				-	-	-		-	- Er-169	-	-	-	-
Er-171	300				-	-	-		-	- Er-171	-	-	-	-
Tm-170	100	320,000	140,000		3,2	400	-		-	- Tm-170	1,400	308	1,708	308
Tm-171	1,000				-	-	-		-	- Tm-171	-	-	-	-
Yb-175	300				-	-	-		-	- Yb-175	-	-	-	-
Lu-177	300				-	-	-		-	- Lu-177	-	-	-	-
Hf-181	200	984,000	165,000		492	825	-		-	- Hf-181	825	182	1,007	182
Ta-182	100				-	-	-		-	- Ta-182	-	-	-	-
W-181	1,000				-	-	-		-	- W-181	-	-	-	-
W-185	300				-	-	-		-	- W-185	-	-	-	-
W-187	200	74,700,000	294,000		373,500	1,470	-		-	- W-187	1,470	323	1,793	323
Re-186	300				-	-	-		-	- Re-186	-	-	-	-
Re-187	9,000				-	-	-		-	- Re-187	-	-	-	-
Re-188	200				-	-	-		-	- Re-188	-	-	-	-
Os-185	200				-	-	-		-	- Os-185	-	-	-	-
Os-191	600				-	-	-		-	- Os-191	-	-	-	-





Fe-59	515	113	70	840	3,650	25,550
Co-58	823	181	70	840	3,650	25,550
Co-60	539	119	70	840	3,650	25,550
Ni-63	24,400	5,368	70	840	3,650	25,550
Zn-65	156	34	70	840	3,650	25,550
Se-75	79	17	70	840	3,650	25,550
Rb-86	110	24	70	840	3,650	25,550
Sr-89	3,600	792	70	840	3,650	25,550
Sr-90	831		70	840	3,650	25,550
Sr-91	1	2	70	840	3,650	25,550
Sr-92	1	1,644	70	840	3,650	25,550
Y-91	868	188	70	840	3,650	25,550
Y-92	1	2,275	70	840	3,650	25,550
Y-93		2,176	70	840	3,650	25,550
Zr-93		18	70	840	3,650	25,550
Zr-95	960	212	70	840	3,650	25,550
Zr-97	1	3	70	840	3,650	25,550
Nb-95	047	230	70	840	3,650	25,550
Mo-99	0	112	70	840	3,650	25,550
Tc-99		70	70	840	3,650	25,550
Ru-103	1,260	277	70	840	3,650	25,550
Ru-106	880	194	70	840	3,650	25,550
A-110	739	163	70	840	3,650	25,550
C-112	154	34	70	840	3,650	25,550
In-115		166	70	840	3,650	25,550
Sn-118	8	184	70	840	3,650	25,550
Sn-125	1,002	220	70	840	3,650	25,550
Sb-124	1,215	267	70	840	3,650	25,550
Te-127	1,222	269	70	840	3,650	25,550
Te-129	1,470	323	70	840	3,650	25,550
Te-131m	475	104	70	840	3,650	25,550
Te-132	540	117	70	840	3,650	25,550
Te-132	2,827	619	70	840	3,650	25,550
	68	15	70	840	3,650	25,550
Ba-140	791	174	70	840	3,650	25,550
La-140	1,527	336	70	840	3,650	25,550
Ce-141	867	191	70	840	3,650	25,550
Ce-143	1,650	363	70	840	3,650	25,550
Ce-144	1,177	259	70	840	3,650	25,550
Nd-147	855	188	70	840	3,650	25,550
Pm-147	1,182	260	70	840	3,650	25,550
Pm-149	1,860	409	70	840	3,650	25,550
Sm-151	1,890	416	70	840	3,650	25,550
Eu-152	675	149	70	840	3,650	25,550
Eu-154	1,512	333	70	840	3,650	25,550
Eu-155	943	208	70	840	3,650	25,550
Gd-153	1,108	244	70	840	3,650	25,550
Tb-160	1,150	253	70	840	3,650	25,550
Ho-166	1,038	228	70	840	3,650	25,550
Tm-170	1,400	308	70	840	3,650	25,550
Hf-181	825	182	70	840	3,650	25,550
W-187	1,470	323	70	840	3,650	25,550
Ir-192	1,350	297	70	840	3,650	25,550

Au-198	1,800	396	70	840	3,650	25,550
Hg-203	1,615	355	70	840	3,650	25,550
Tl-204	520	114	70	840	3,650	25,550
Bi-207	730	161	70	840	3,650	25,550
Bi-210	9,400	2,068	70	840	3,650	25,550
Po-210	18	4	70	840	3,650	25,550
Ra-226	132	29	70	840	3,650	25,550
Ac-227	38	8	70	840	3,650	25,550
Th-227	1,367	3	70	840	3,650	25,550
U-235	61	3	70	840	3,650	25,550
U-238	415	91	70	840	3,650	25,550
Np-239	773	170	70	840	3,650	25,550
Pu-236	142	31	70	840	3,650	25,550
Pu-238	5	12	70	840	3,650	25,550
Pu-239	11	11	70	840	3,650	25,550
Pu-240	49	11	70	840	3,650	25,550
Pu-241	130	29	70	840	3,650	25,550
Pu-242	51	11	70	840	3,650	25,550
Am-241	0	13	70	840	3,650	25,550
Cm-242	1	232	70	840	3,650	25,550
Cm-244	101	22	70	840	3,650	25,550
Cm-246	59	13	70	840	3,650	25,550

Concentrations to MCLs and 2007 PAG

1 year > MCL 1 month > MCL 1 week > MCL 1 day > MCL

0 1 2 70 840 867 867 3,650 25,550 3,650 25,550



The Honorable Gina McCarthy ([McCarthy.Gina@epa.gov](mailto:McCarthy.Gina@epa.gov))  
Administrator United States Environmental Protection Agency  
William Jefferson Clinton Building  
1200 Pennsylvania Avenue, N.W. Mail  
Code 1101A Washington, D.C. 20460

(b) (6)

September 13, 2016

### Objection

Re: Draft Protective Action Guides for Radionuclides in Drinking Water

(Docket Number (EPA-HQ-OAR-2007-0268; FRL-9947-55-OW) FR 81:112 page 37589-37592, June 10, 2016)

Hon. Gina McCarthy & PEER Members *Listed in the July 25, 2016 letter to the EPA @*

[www.peer.org/assets/docs/7-26-63OrganizationsPAGsComments.pdf](http://www.peer.org/assets/docs/7-26-63OrganizationsPAGsComments.pdf)

In support of PEER's comments, I hereby object to your Agency's PAG notice as published in the 6/10/16 Federal Register with this false claim: "***The proposed PAG is designed to work in concert with the other Protective Action Guides currently in place for other media in the intermediate phase (i.e., the Food and Drug Administration's 500 mrem PAG for ingestion of food) and provides an additional level of protection for the most sensitive life stages.***"

First, the FDA has no Alpha, Beta or Gamma MCLs for bottled radioactive water or beverages.

Second, as illustrated in Exhibit A, your Agency's **Sum-of-the-Fractions** method indicates doses to teenagers & adults will exceed **500 mrem/yr** if they drink only 2 liters/day of water containing a fraction of the proposed PAG concentrations for Sr-90, I-131, Cs-137. In fact, if their decay products are included, the dose to thousands of people could exceed the current MCL of **4 mrem/yr** by over **18,320 mrem/yr (0.183 Sv/yr)**, as illustrated in Table I.

**Table I: Sum-of-the-Fractions Method Indicates Worst Case Doses Can Exceed 500 mrem/yr (5 mSv/yr)**

Emitter	(X) Proposed PAG Concentration (pCi/L)	(Y) Dose Conversion Factor (pCi/4mrem)	(X/Y) A) Calculated Fraction	(A/4) Calculated Total mrem	Half-Life
Strontium-90 (Sr-90)	7,400	8	925	3,700	28.79 yr
Yttrium-90 (Y-90)	7,400 (T>20 days)	60	123.3	493.2	2.761 d
Iodine-131 (I-131)	10,350	3	3,450	13,800	8.023 d
Xenon-131m (Xn-131m)	75.5 (T=10 days)	n/a	n/a	n/a	11.93 d
Cesium-137 (Cs-137)	16,570	200	82.85	331.4	30.04 yr
Barium-137m (Ba-137m)	15,642 (T>20 min)	n/a	n/a	n/a	2.552 min
Sum-of-the-Fractions			4,581	18,324	183.24 mSv/yr
Gross Beta	57,438 pCi/L	MCL Exceedance		18,320 mrem/yr	183.2 mSv/yr

### NY State Officials Cannot Be Trusted

Contrary to EPA-propaganda cited in Footnote #1, my water quality reports indicate corrupt NY State officials cannot be trusted to use the Sum-of-the Fractions Method<sup>2</sup> in the event of an emergency to determine when alternative drinking water should be provided and the use of contaminated water supplies should be restricted. Consequently, thousands of men, women & children could be ingesting atomic-energy doses far in excess of **500 mrem/yr**. Exhibits A-I indicate the proponents of this heinous scam failed to use modern analysis tools like [Nucleonica](http://www.nucleonica.com) to estimate radiation doses delivered by 2 liters per day of water that may contain dozens of fission products in addition to dozens of naturally occurring radionuclides having no proposed PAG values, as discussed in the pending PEER lawsuit cited in Footnote #3.

Many corrupt state & county health departments, including mine, have never imposed the Sum-of-the-Fractions method on any public water company, despite numerous complaints to EPA, state & county officials.

### Fraudulent Use of EPA Method 900 Alters Test Samples To Suppress In-growth

Water quality reports @ [www.scwa.com](http://www.scwa.com), [www.gfxtechnology.com/Radon.html](http://www.gfxtechnology.com/Radon.html), [www.gfxtechnology.com/SCL.pdf](http://www.gfxtechnology.com/SCL.pdf), [www.gfxtechnology.com/CCE.pdf](http://www.gfxtechnology.com/CCE.pdf) contain false Gross Alpha & Gross Beta test results obtained by EPA Method 900, which can suppress in-growth of decay products from both man-made & naturally occurring radionuclides dissolved in tap or bottled water. For example, as shown in the enclosed graphs for Cs-137 & Sr-90, total activity quickly exceeds the initial activity of either a parent after being dissolved in water. (See other graphs @ [www.gfxtechnology.com/1-Ci.pdf](http://www.gfxtechnology.com/1-Ci.pdf))

Therefore, you must reject the proposed PAGs and add MCLs for Radon gases to the Safe Drinking Water Act as Congress ordered decades ago. [**Radon in Drinking Water Rule**, Federal Register on November 2, 1999 (64 FR 59246)]

(b) (6)

<sup>1</sup> At what point and what concentrations will I be told to stop drinking tap water during a radiological emergency?

State and local officials will make decisions about continued use of tap water based upon the conditions on-site during a **radiological emergency**. The proposed drinking water PAG provides information they will consider, including two scientifically-based levels to be avoided (100 mrem for infants, children aged 15 and under, pregnant women and nursing women; **500 mrem for anyone over age 15** excluding pregnant women and nursing women) for periods up to one year. Since this is only guidance, the levels selected by your state or local officials will depend on the type and severity of the incident. You may not be instructed to stop drinking tap water. Your water department—in coordination with state/local officials and emergency managers—may choose to either use water from storage tanks that have not been impacted by radiation, purchase water from a neighboring town, transport water in tanker trucks or provide **[unregulated, radioactive]** bottled water to the community. (From: <https://www.epa.gov/radiation/proposed-drinking-water-protective-action-guide-pag-radiological-emergencies-information>)

<sup>2</sup> See EPA ILLUSTRATION II-1 Conversion of Beta Particle and Photon Emitters @ <https://nepis.epa.gov/Exe/ZyPDF.cgi?P1009DJN.PDF?Dockey=P1009DJN.PDF>.

<sup>3</sup> See PEER Lawsuit @ [http://www.peer.org/assets/docs/epa/10\\_24\\_16\\_Complaint\\_EPA-radionuclides.pdf](http://www.peer.org/assets/docs/epa/10_24_16_Complaint_EPA-radionuclides.pdf).



**Exhibit A: Erroneous example of "Sum-of-the-Fractions" method mandated by the EPA's Radionuclides Rule to determine if a public water system is in compliance with the 4 mrem/yr MCL for beta particle and photon radioactivity (40 CFR 141.66(d))<sup>4,5</sup>.**

**ILLUSTRATION II-1  
Conversion of Beta Particle and Photon Emitters**

A water system near a nuclear power facility collects a sample which the laboratory speciates by EPA method 902.0 (gamma spectrometry analysis). The laboratory also analyses for strontium-90 using EPA method 905.0. The analysis indicates the following:

Cesium-134 (Cs-134): 5,023 pCi/L  
 Cesium-137 (Cs-137): 30 pCi/L  
 Strontium-90 (Sr-90): 4 pCi/L  
 Iodine-131 (I-131): 2 pCi/L

To determine compliance the following calculations are completed:

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from table (pCi/4mrem)	(X/Y=A) Calculated Fraction <sup>1</sup>	(A*4) Calculated Total mrem <sup>2</sup>
Cs-134	5,023	20,000	0.25115	
I-131	2	3	0.7	
Cs-137	30	200	0.150	
Sr-90	4	8	0.5	
Sum-of-the-fractions			1.60115	7

<sup>1</sup>To ensure accuracy, the results were rounded to the number of figures in the conversion table. See Appendix I.

<sup>2</sup>Since data reported to the State or EPA should be in a form containing the same number of significant digits as the MCL, the results were rounded to one significant digit. The last significant digit was increased by one unit if the digit dropped was a 5, 6, 7, 8, or 9; and was not altered if the preceding number was a 0, 1, 2, 3, or 4.

The system is in violation of the MCL because the "sum-of-the-fractions" is 7 mrem, which means that the sum of the annual dose equivalent to the total body, or to any internal organ, exceeds 4 mrems/year.

From: EPA Implementation Guidance for Radionuclides, Page II-2 @  
<https://nepis.epa.gov/Exe/ZyPDF.cgi/P1009DJN.PDF?Dockkey=P1009DJN.PDF>

**Exhibit B. Corrected version of Table A using Cs-134m; parent of Cs-134.**

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from Table (pCi/4mrem)	(X/Y A) Calculated Fraction	(A/4) Calculated Total mrem	Half-Life
Cs-134m	5,023	20,000	0.25115		2.908 hr
I-131	2	3	0.7		8.023 d
Cs-137	30	200	0.15		30.04 yr
Sr-90	4	8	0.5		28.79 yr
Sum-of-the-Fractions			1.6015	7	.07 mSv/yr
Gross Beta	5,059 pCi/L	MCL Exceedance		3 mrem/yr	0.03 mSv/yr

<sup>4</sup> To determine compliance, each beta and photon emitter must be converted from pCi/L to millirems using the conversion tables listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air or Water for Occupational Exposure" [National Bureau of Standards (NBS) Handbook 69 as amended August, 1963, U.S. Department of Commerce and/or Radionuclides in Drinking Water: A Small Entity Compliance Guide; pg 13 @ <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=200012IN.txt>]

<sup>5</sup> Each Curie of ingested Alpha radiation delivers 20 times the atomic energy of a Curie of Beta or Photon radiation. One Joule per Kilogram = 1 Sievert (Sv) = 100 Rem

**Exhibit C. Modified version of Table B  
including time-dependant radioactive decay products.**

Parent Emitter	Lab Analysis of Parents (pCi/L)	Radioactive Decay Products	Calculated Fraction of Parent Activity Using Nucleonica
Cs-134m	5,023	Cs-134	1.58e-3 (after 10 hours of in-growth)
I-131	2	Xn-131m gas	7.29e-3 (after 10 days of in-growth)
Cs-137	30	Ba-137m	0.944 (after 20 min of in-growth)
Sr-90	4	Y-90	1.00 (after 20 days of in-growth)

Emitter	(X) Lab Nucleonica Analysis (pCi/L)	(Y) Conversion from Table (pCi/mrem)	(X+Y) A) Calculated Fraction	(A/4) Calculated Total mrem	Half-Life
Cs-134m	5,023	20,000	0.25115		2.908 hr
Cs-134	7.94 (T=10 hr)	80	0.09925	0.397	2.065 yr
I-131	2	3	0.7		8.023 d
Xn-131m	0.0146 (T=10 days)	n/a	n/a	n/a	11.93 d
Cs-137	30	200	0.15		30.04 yr
Ba-137m	28.3 (T>20 min)	n/a	n/a	n/a	2.552 min
Sr-90	4	8	0.5		28.79 yr
Y-90	4 (T>20 days)	60	0.0667	0.2668	2.761 d
Sum-of-the-Fractions			2.26495	9	0.09 mSv/yr
Gross Beta	5,071 pCi/L	MCL Exceedance		9 mrem/yr	0.09 mSv/yr

Decay product Activity & Half-Life values from tables @ [www.gfxtechnology.com/1-Ci.pdf](http://www.gfxtechnology.com/1-Ci.pdf) #

#  
#  
#  
#

**Exhibit D. Modified version of Table C corresponding to Water-PAG concentrations proposed by President Obama  
for I-131, Cs-137 & Sr-90, which excluded ingested radiation doses from their highly radioactive decay products:  
Xn-131m, Ba-137m & Y-90, respectively.**

Emitter	Lab Analysis (pCi/L)	Radioactive Decay Products	Calculated Fraction of Parent Activity Using Nucleonica
Cs-134	5,023	None	n/a
I-131	10,350	Xn-131m gas	0.64e-3 (after 1 day of in-growth) 7.29e-3 (after 10 days of in-growth)
Cs-137	16,370	Ba-137m	0.944 (after 20 min of in-growth)
Sr-90	7,400	Y-90	1.00 (after 20 days of in-growth)

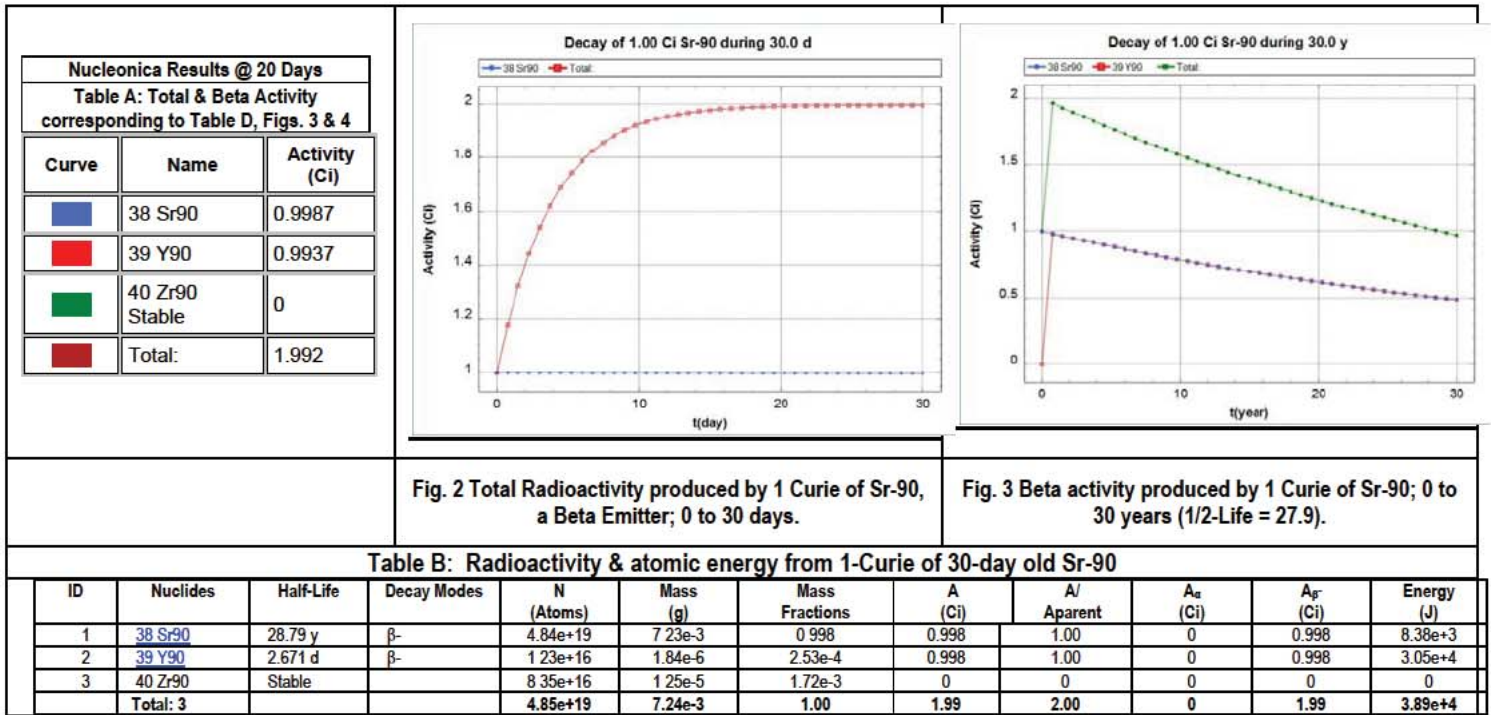
  

Emitter	(X) Lab Analysis (pCi/L)	(Y) Conversion from Table (pCi/mrem)	(X+Y) A) Calculated Fraction	(A/4) Calculated Total mrem	Half-Life
Cs-134	n/a	20,000	n/a		2.908 hr
Cs-134m	n/a	80	n/a		2.065 yr
I-131	10,350	3	3,450		8.023 d
Xn-131m	75.5 (T=10 days)	n/a	n/a		11.93 d
Cs-137	16,570	200	82.85		30.04 yr
Ba-137m	15,642 (T>20 min)	n/a	n/a		2.552 min
Sr-90	7,400	8	925		28.79 yr
Y-90	7,400 (T>20 days)	60	123.3		2.761 d
Sum-of-the-Fractions			4,581	18,324	183.24 mSv/yr
Gross Beta	57,438 pCi/L	MCL Exceedance		18,320 mrem/yr	183.2 mSv/yr

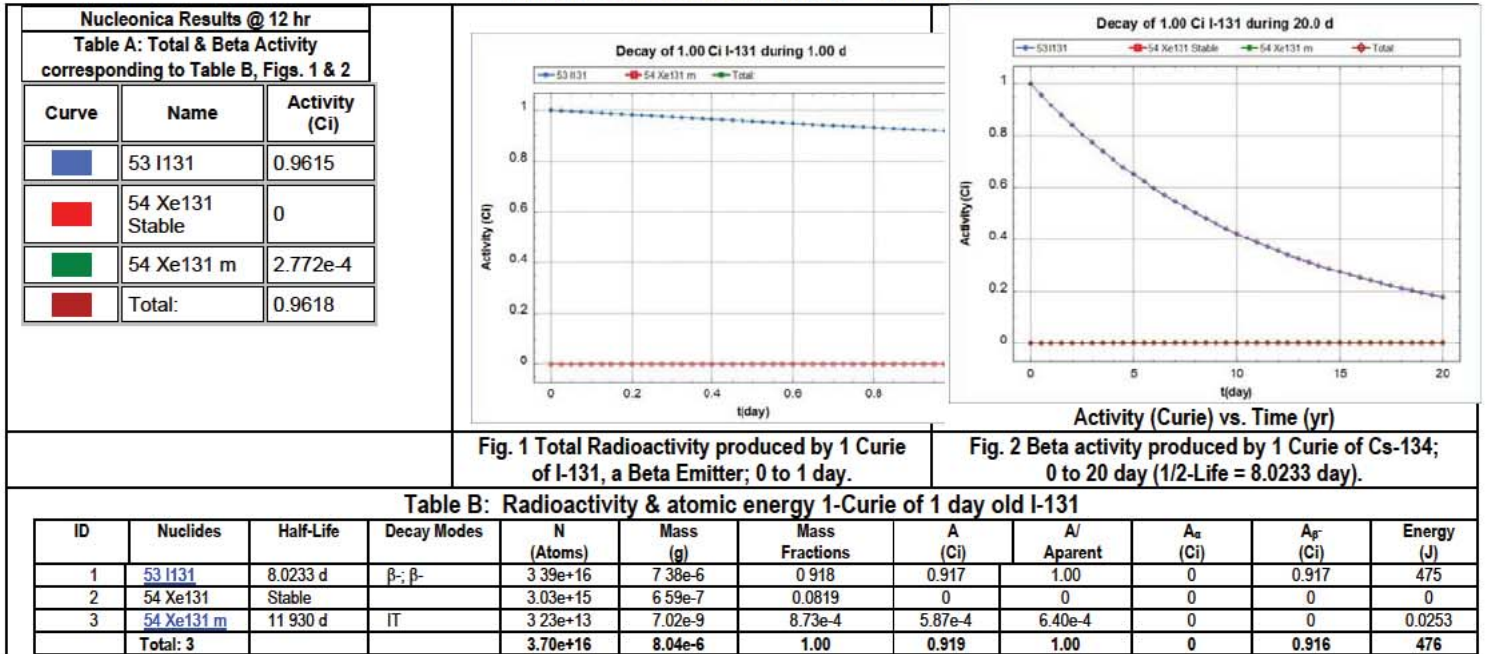
#



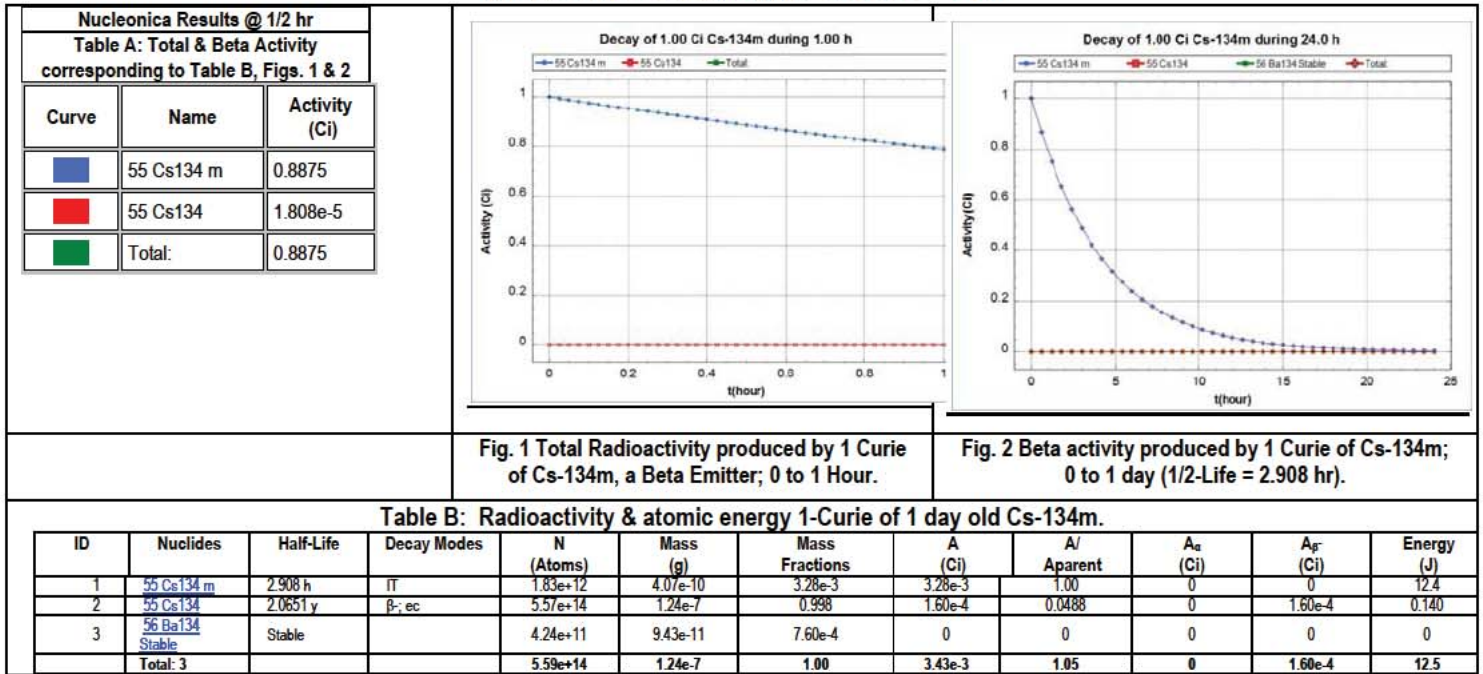
### Exhibit E. Nucleonica Analysis of 1-Ci of Sr-90



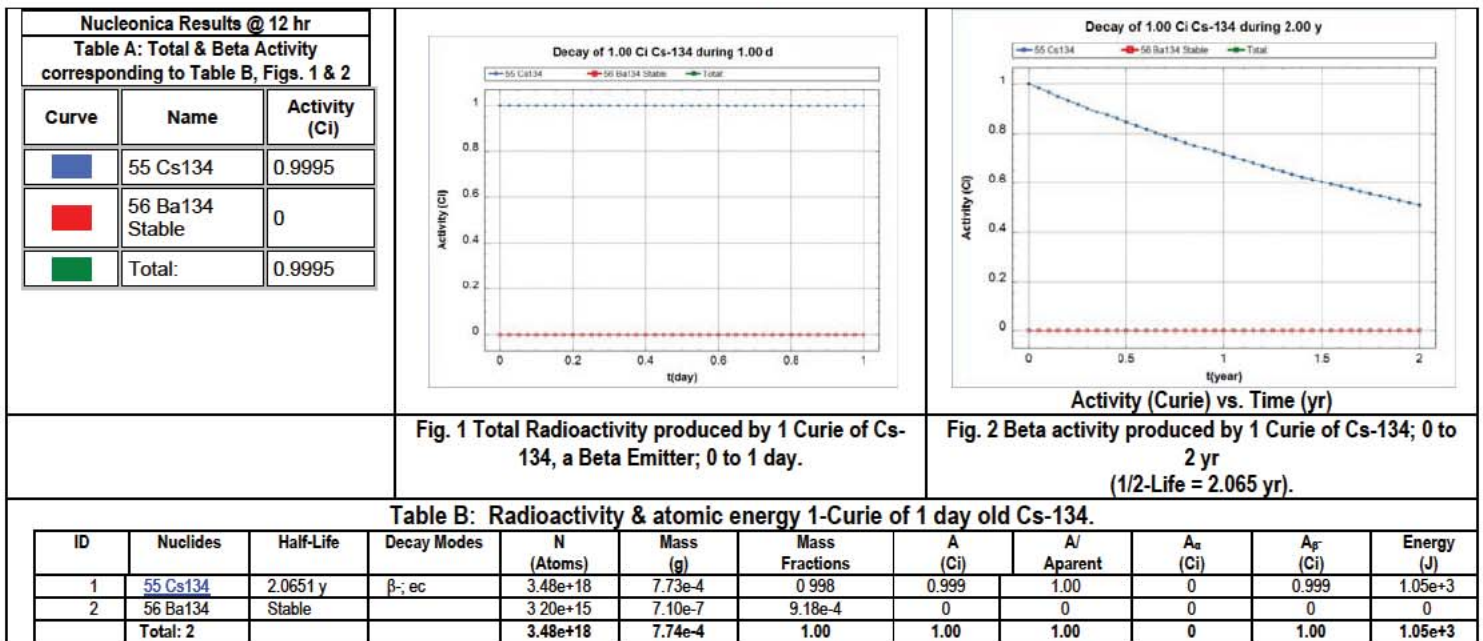
### Exhibit F. Nucleonica Analysis of 1-Ci of I-131







### Exhibit G. Nucleonica Analysis of 1-Ci of Cs-134m

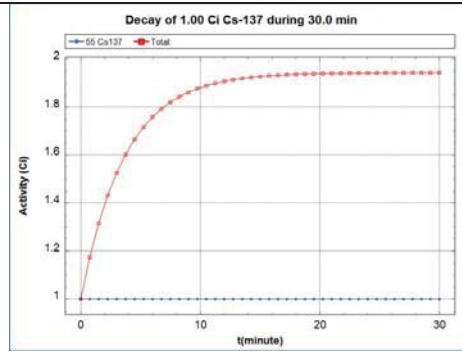


### Exhibit H. Nucleonica Analysis of 1-Ci of Cs-134



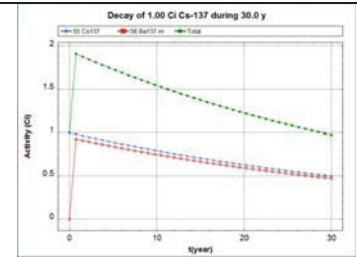
# Exhibit I. Nucleonica Analysis of 1-Ci of Cs-137

Nucleonica Results @ 20 Minutes		
Table A: Total & Beta Activity corresponding to Table B, Figs. 1 & 2		
Curve	Name	Activity (Ci)
	55 Cs137	1.000
	56 Ba137 m	0.9398
	56 Ba137 Stable	0
	Total:	1.940



Activity (Curie) vs. Time (yr)

Fig. 1 Total Radioactivity produced by 1 Curie of Cs-137, a Beta Emitter; 0 to 30 minutes (1/2-Life = 30.03 yr).



Activity (Curie) vs. Time (yr)

Fig. 2 Beta activity produced by 1 Curie of Cs-137; 0 to 30 yr (1/2-Life = 30.03 yr).

Table B: Radioactivity & atomic energy 1-Curie of 30-minute old C-137

ID	Nuclides	Half-Life	Decay Modes	N (Atoms)	Mass (g)	Mass Fractions	A (Ci)	A/ Aparent	A <sub>α</sub> (Ci)	A <sub>β</sub> (Ci)	Energy (J)
1	55 Cs137	30.04 y	β <sup>-</sup> ; β <sup>-</sup>	5.06e+19	0.0115	1.00	1.00	1.00	0	1.00	5.88
2	56 Ba137 m	2 552 m	IT	7.71e+12	1.75e-9	1.52e-7	0.944	0.944	0	0	5.85
3	56 Ba137	Stable		5.89e+13	1 34e-8	1.16e-6	0	0	0	0	0
Total: 3				5.06e+19	0.0115	1.00	1.94	1.94	0	1.00	11.7

Table C: Falsified Gross Beta test results from the 2002 Water Quality Report; Table 31 @ <http://www.gfxtechnology.com/Radon.html> [1] [2]

Component	Low Value	High Value	Avg. Value	Number of Tests
Gross Alpha Activity pCi/l	ND	1.5	ND	9
Gross Beta Activity pCi/l	ND	2.0	ND	9
Cesium-137 pCi/l	ND	10.1	ND	9
Lead-210 pCi/l	ND	ND	ND	9
Radon	NA	NA	NA	0

## NOTES

[1] Tables A & Fig. 1 indicate the total Beta Activity produced by one Curie of Cs-137 grows to 1.94 Curies within 20 minutes of being dissolved in water. Table B & Fig. 2 show it takes about 30 years for the total Beta activity to reach the initial activity of Cs-137. Therefore, the Gross Beta activity reported by the SCWA should have been between 10.1 & 19.6 pCi/L -- not 2.0 pCi/L.

[2] The SCWA's [RAILROAD AVE](#) well field is located south of the BNL & Grumman Superfund sites. It had 2 wells [#S-32359](#), [S-81473](#) located in Center Moriches in 2001; SCWA Distribution Area # 20 in 2002 serving: Mastic, Mastic Beach, Moriches, North Shirley, Ridge, Shoreham, South Manor, South Ridge & Westhampton Beach with radioactive water.



Distribution Area 20				
Range of Readings				
	Low Value	High Value	Avg. Value	No. of Tests
Radioactivity				
Gross Alpha activity pCi/l	ND	4.0	ND	59
Gross Beta activity pCi/l	ND	5.1	ND	59
Cesium-137 pCi/l	ND	10.1	ND	53
Lead-210 pCi/l	ND	1080	20.8	53
Radon pCi/l	ND	232	ND	50

Table D: Excerpt from the fraudulent 2003 water quality report from the Suffolk County Water Authority (SCWA) @ <http://gfxtechnology.com/WQR-03.pdf>.

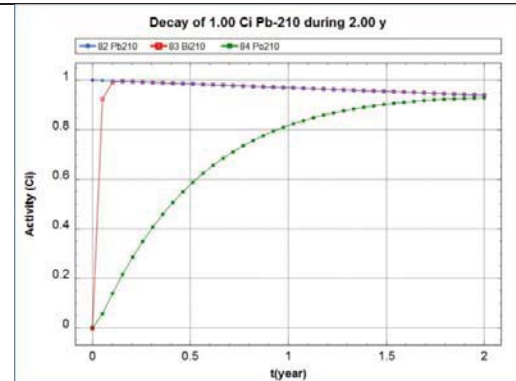
## Additional Proof of Fraud

(Added 12/17/16)

[3] Table D & Fig. 3 contain proof that the EPA approved a water quality report submitted by the SCWA that contained numerous fraudulent entries, such as: (a) a false High Value of Gross Beta activity of only 5.1, when it should have been at least **2,643 pCi/L** from Cs-137, Ba-137m, Pb-210, Pb-214, Bi-210, Bi-214 and (b) a false High Value of Gross Alpha activity of only 4.0 pCi/L when it should have been at least **1,776 pCi/L** Rn-222, Po-210, Po-214 & Po-218 -- far above the **15 pCi/L Gross Alpha MCL**.

[4] Application of the EPA's the Sum-of-the Fractions method for 10.1 pCi/L of Cs-137, 1,080 pCi/L of Pb-210 alone yields an annual dose of  $4[(10.1/200)+(1080/1.2)] = 3,600 \text{ mrem}$ ; far above the Gross Beta MCL of 4mrem -- excluding doses from Ba-137m, Pb-214, Bi-210 & Bi-214. Yet the SCWA wrote "NYS considers 50 pCi/L of gross beta activity to be the level of concern for gross beta." (Quote from pg. 19 or the 2016 Water Quality report @ <http://s1091480.instanturl.net/dwqr2016/2016 DWQR FINAL 5-31-16.pdf>)

\*\*\* Table MW2. Radionuclides in On-Site Monitoring Wells in the [BNL Health Assessment](#) indicates the conversion factor for Beta/Photon particles emitted by Ra-226 & Pb-210 are about 3 & 1.2 pCi/4mrem.



Activity from Pb-210, Bi-210 & Po-210 (Ci) vs. Time (yr)

Fig. 3 Graph of Alpha & Beta activity produced by 1 Curie of Pb-210. (from [www.gfxtechnology.com/1-Ci.pdf](http://www.gfxtechnology.com/1-Ci.pdf))



Mon Feb 27 11:03:13 EST 2017  
Pruitt.Scott@epamail.epa.gov  
Fw: Ignored Oroville warning raises big quake, levee questions  
To: CMS.OEX@epamail.epa.gov

---

---

**From:** (b) (6)

**Sent:** Sunday, February 26, 2017 6:14 PM

**To:** Pruitt, Scott; tdalias@aol.com; Steve Miller; Harold Kruger; Lou Binnering; Lisa Van De Hey; Ron Sullenger; Jim Whiteaker; Larry Munger; Rick Libby; Dale Kasler; Ryan Sabalow; Amanda Hopper; Steve Geiger; sectyrodriquez@calepa.ca.gov; Matthew@Waterboards Buffleben; Bryan@Waterboards Elder; business@sfchronicle.com; bmercer@sfgate.com; newsletters@sfgate.com; gavalos@bayareanewsgroup.com; george.low@waterboards.ca.gov; Wendy Wyels; pamela.creedon@waterboards.ca.gov; andrew.altevogt@waterboards.ca.gov; janiene.friend@water.ca.gov; maryann.archuleta@water.ca.gov; sarmstrong@waterboards.ca.gov; Sutter Buttes Tea Party; begelko@sfchronicle.com; ed.chapuis@fox40.com; Adam O'Connor; paul.scherbak@ch2m.com; Rhonda Shiffman; kathy.rose@ch2m.com; Brendan Kenny; Ryan Reilly; metro@sfchronicle.com; Chuck and Pat Miller; paul@a21r.com; assemblymember.gallagher@outreach.assembly.ca.gov; Assemblymember Gallagher; David Little; hhacking@chicoer.com; abyik@chicoer.com  
**Subject:** Fw: Ignored Oroville warning raises big quake, levee questions

Dear EPA Secretary Pruitt,

I have sent you several emails regarding what has been going on in our area regarding the Democrat / Liberal controlled California Government SWRCB authoring false / misleading report that helped PG&E and (b) (6) who has a long history ignoring regulations, violating regulations and illegally transporting, discharging, storing and disposing of waste and ash going to and coming from a bio-mass plant in Oroville which was producing toxic ash that was being used as soil amendment on farmlands in the area.

It appears that PG&E benefited and / or profited from the illegally transported, stored, discharge and disposed waste and ash because PG&E was buying and selling the power that the bio-mass plant.

(b) (6) was involved in the Green Energy / Global Warming / Climate Change Scam by illegally transporting, storing, discharging and disposing of waste and ash.

PG&E Pipeline Repair Projects R-502 and R-503 NOIs was approved by our Regional Water Boards and a PG&E facility / discharge was approved to (b) (6) Property by the Regional Board even though they knew (b) (6) has a long history ignoring regulations, violating regulations including at the very site that they approved the PG&E facility / discharge.

It appear to us that they were discharging into the drainage ditch and / or the facility was leaking, spilling and discharging into the ditch so I submitted a complaint to Sutter County which included photos and other material. Sutter County issued (b) (6) a violation so it appears the evidence was good enough to convince them they were discharging but it was later retracted because of SWRCB.

SWRCB Special Investigations Unit investigated and authored a report that was false / misleading and failed to inspect the waste water and facility before they were removed and failed to calculate if more waste water came in than went out to help determine if there was a discharge which helped PG&E. Basically they allowed PG&E to clean up the crime scene or violation scene and remove evidence before they inspected it and failed to include photos of the location that would have contradicted statements made by PG&E and / or its contractors regarding storm water being ponded after approximately 2 weeks of dry weather. We have been in a extreme drought state of emergency since 2014 so its storm water does not stay ponded in our area after approximately 2 weeks of dry weather in extreme drought conditions.

The Obama Administration and Democrats gave away billions of dollars to Green Energy Projects and Companies including to many in California linked to Gov. Brown and Democrats but much of that money was wasted because some of the companies went bankrupt.

At least tens of millions went to PG&E.

But it appears that none of this money that came to California and PG&E was spent to fix the problems with Oroville Dam which is closely linked to Democrats / Liberals who have basically been bought and paid for by PG&E.

The water levels at Oroville Dam are linked to DWR and PG&E which are linked to Gov. Brown, Democrats and Liberals and not President Trump and his administration.

Who controls the water levels at Oroville Dam ? DWR

Who benefits and profits from the water levels at Oroville Dam ? DWR and PG&E

Who is DWR under the control of ? Gov. Brown (staff former PG&E executives), Democrats and Liberals.

Who gives to Gov. Brown, Democrats and Liberals and basically has them bought and paid for ? PG&E

Respectfully - (b) (6)

----- Forwarded Message -----

**From:** "email@addthis.com" <email@addthis.com>  
**To:** (b) (6)  
**Sent:** Sunday, February 26, 2017 1:10 PM  
**Subject:** Ignored Oroville warning raises big quake, levee questions

Blaming President Bush

[http://www.appeal-democrat.com/opinion/ignored-oroville-warning-raises-big-quake-levee-questions/article\\_5b2c753a-fbe9-11e6-9d7b-47dd4a2f8c35.html#\\_WLNYUpvjE\\_email](http://www.appeal-democrat.com/opinion/ignored-oroville-warning-raises-big-quake-levee-questions/article_5b2c753a-fbe9-11e6-9d7b-47dd4a2f8c35.html#_WLNYUpvjE_email)

---

This message was sent by (b) (6) via <http://addthis.com>. Please note that AddThis does not verify email addresses.

To stop receiving any emails from AddThis, please visit: [http://www.addthis.com/privacy/email-opt-out?e=ffL\\_IOSR74\\_nmu2P.73xnOCS59PrkuU](http://www.addthis.com/privacy/email-opt-out?e=ffL_IOSR74_nmu2P.73xnOCS59PrkuU)

## Smart Meter Harm

Overbilling, fires, health problems,  
inaccuracy, hacking & cybersecurity,  
interference, privacy loss, and more...

---

## California governor's top staff are PG&E executives

Posted on [August 1, 2014](#)

Why has Governor Jerry Brown refused to fire CPUC Chairman Michael Peevey, formerly President of Southern California Edison?

The San Bruno explosion and ongoing investigations have brought many of the longstanding issues and internal problems at the CPUC into the open. The cozy relationship between Pacific Gas & Electric (PG&E) and the CPUC was further documented this week with the release of emails obtained by the city of San Bruno.[\[i\]](#)

However, to date, Governor Jerry Brown has ignored the substantial evidence of Chairman Peevey's autocratic rule, mismanagement, and conflict of interest. His office said in 2012:

**"We have confidence that the PUC will faithfully discharge their duties to zealously guard the public interest and get to the bottom of any injustice raised by the San Bruno pipeline explosion."**

[http://www.mercurynews.com/breaking-news/ci\\_21829508/mothers-pg-e-blast-victims-urge-brown-fire](http://www.mercurynews.com/breaking-news/ci_21829508/mothers-pg-e-blast-victims-urge-brown-fire)

Mothers of San Bruno PG&E blast victims urge Gov. Jerry Brown to fire state's top utility regulator, 10-22-12

Why?

Because Gov. Jerry Brown himself has a very, very close relationship with PG&E, and that conflict of interest doesn't bother him at all.

There are four people at the top of Brown's administration: Jerry Brown, his wife Anne Gust Brown, and former PG&E executives Nancy McFadden and Dana Williamson.

Brown appointed both these execs in 2011. Nancy McFadden was Senior Vice President and Senior Advisor to the Chairman and CEO of PG&E Corp. Prior to that, she was Senior Vice President for Public Affairs for PG&E Corp. and Pacific Gas and Electric Company.

Dana Williamson was Director of Public Affairs for PG&E.

Dana Williamson was hired as his senior adviser for cabinet and external affairs, and to oversee the governor's external affairs operation and the administration's Washington, D.C., office. Last summer, she was officially named as his cabinet secretary, "a job that has traditionally been the second-most-powerful staff position in a gubernatorial administration."

Nancy McFadden is his executive secretary/chief of staff, his gatekeeper. [\[ii\]](#)

It is incredible that any corporation should have such visible power over a government.

On top of that, when Brown was elected in 2011, San Bruno had just happened. The newspapers were full of the tragedy and the growing scandal over PG&E and the PUC. That continues to this day.

Furthermore, California voters had just defeated PG&E's Proposition 16 in June 2010. PG&E mounted a campaign, via this proposition, to stop the formation of locally-owned municipal utilities which were cutting into its monopoly.

Who ran that campaign at PG&E? Nancy McFadden.

McFadden also previously worked for Gov. Gray Davis.

Gov. Brown's connection with utility companies runs deep into his policy initiatives. For example, the high speed rail project he's pushing will benefit PG&E and Southern California Edison enormously because of the huge amount of electricity it would use.

So, don't expect Jerry Brown to take any real interest or action on the problems at the PUC. The problems with PG&E and other special interests start at the top in California – in the governor's office.

When are Californians voters going to fire Jerry Brown?

---

Sources:

<http://articles.latimes.com/2014/mar/29/local/la-me-nancy-mcfadden-20140330>

Indispensable insider looks out for Gov. Jerry Brown's interests/As the governor's gatekeeper and chief liaison to the Legislature, Nancy McFadden is the longest-serving loyalist in Brown's inner circle.

March 29, 2014

<http://www.milkeninstitute.org/events/gcprogram.taf?function=bio&EventID=GC10&SPID=4764>

Speaker Biography — Miliken Conference: Shaping the Future, April 26-28, 2010

<http://blogs.sacbee.com/capitolalertlatest/2011/11/jerry-brown-names-pge-official-dana-williamson-senior-adviser.html#ixzz1ciLUiXdy>

Jerry Brown names PG&E official as his senior adviser, November 3, 2011

<http://freebeacon.com/issues/pacific-gas-cronyism/>

Pacific Gas & Cronyism, March 14, 2012

<http://freebeacon.com/issues/cronyism-at-any-speed/>

Cronyism at Any Speed: California utilities, in search of taxpayer windfall, lobby for high speed rail, March 19, 2012

<http://greencorruption.blogspot.com/2012/05/brightsource-energy-political-influence.html>

BREAKING: BrightSource Energy Political Influence and Their \$1.6 Billion DOE Loan, May 16, 2012



<http://articles.latimes.com/2012/jun/06/opinion/la-oe-morrison-gust-brown-governor-california-20120606>

Anne Gust Brown: Much more than California's first lady

As special advisor to her husband, Gov. Jerry Brown, she's a power in her own right.

June 06, 2012

<http://articles.latimes.com/2013/mar/21/local/la-me-pc-jerry-brown-staff-exodus-continues-20130320>

Jerry Brown staff exodus continues, March 21, 2013

<http://blogs.sacbee.com/capitolalertlatest/2013/08/jerry-brown-fills-cabinet-secretary-post-after-all.html>

Jerry Brown fills cabinet secretary post, after all, August 15, 2013

<http://www.latimes.com/local/political/la-me-pc-jerry-brown-names-dana-williamson-as-cabinet-secretary-20130814-story.html>

Jerry Brown names new senior staff positions, 8-15-13

---

[i] [http://www.contracostatimes.com/news/ci\\_26230237/san-bruno-demands-fines-against-pg-e](http://www.contracostatimes.com/news/ci_26230237/san-bruno-demands-fines-against-pg-e)

<http://sanfrancisco.cbslocal.com/2014/07/28/state-senator-says-pge-trying-to-get-away-with-murder-emails-following-deadly-2010-san-bruno-explosion-examined/>

[ii] "James M. Humes, who was Brown's top aide as attorney general, will be one of the most powerful officials in the new administration, along with Nancy McFadden, a former PG&E executive

...Humes, 51, will be Brown's executive secretary for administration, legal affairs and policy. Humes was Brown's top deputy in the attorney general's office and for the last four years has worked closely with Brown and his wife, Anne Gust Brown.

Gust Brown played a major part in her husband's gubernatorial campaign and will have an integral role in the new administration. Brown appointed her special counsel.

McFadden, a former advisor to Davis, will be the new governor's executive secretary for legislation, appointments and policy — Brown's top liaison with the Legislature. She and Humes are splitting a job traditionally held by a chief of staff." <http://articles.latimes.com/2011/jan/06/local/la-me-jerry-brown-20110106>

"Unlike past governors, Brown has no chief of staff. He initially split the job between two aides — Jim Humes and Nancy McFadden — when he took office in 2011. Humes left the administration for a seat on the state appellate court last year, leaving McFadden as the de facto chief of staff but working without the title."

<http://www.latimes.com/local/political/la-me-pc-jerry-brown-names-dana-williamson-as-cabinet-secretary-20130814-story.html>

Jerry Brown names new senior staff positions

"As the governor's gatekeeper and chief liaison to the Legislature, Nancy McFadden is the longest-serving loyalist in Brown's inner circle."

<http://articles.latimes.com/2014/mar/29/local/la-me-nancy-mcfadden-20140330>

Indispensable insider looks out for Gov. Jerry Brown's interests

## About GSPP (<https://gspp.berkeley.edu/about>)

[Leadership \(/about/leadership\)](#) ▼

[Dean Henry E. Brady \(/about/leadership/dean-henry-brady\)](#)

[Board of Advisors \(/about/leadership/board-of-advisors\)](#)

[Administration \(/directories/staff-administration/administration\)](#)

[History \(/about/history\)](#) ►

[Directories \(/directories\)](#) ►

[Visiting GSPP \(/about/visiting-gspp\)](#)

[Contact, Maps & Parking \(/contact\)](#) ►

## Nancy McFadden

*Executive Secretary to Governor Edmund G. Brown, Office of the Governor, State of CA*

### Biography

Nancy McFadden is Executive Secretary to California Governor Edmund G. Brown, Jr. Prior to that she was the Senior Vice President and Senior Advisor to the Chairman and CEO of PG&E Corporation, and before that was the Senior Vice President of Public Affairs for PG&E Corporation and Pacific Gas and Electric Company.

Previously she was senior advisor to California Governor Gray Davis. A senior member of the Clinton Administration for eight years, she served as deputy chief of staff to Vice President Al Gore, General Counsel for the U.S. Department of Transportation and Deputy Associate Attorney General. The Washington Post named her one of the “go-to people” in the Clinton Administration for her significant record of accomplishment. She started her career practicing law with the firm of O'Melveny and Myers, during which time she was named “One of the 40 Best Lawyers Under 40” by Washingtonian magazine.

She has served on numerous boards, including the California Museum for History, Women's Foundation of California, the California Foundation on the Environment and the Economy, and the Bay Area Council.

McFadden has a JD from the University of Virginia and a BA from San Jose State University.

G



[CONTACT US \(/CONTACT\)](#) [HELP \(/HELP\)](#) [SITE MAP \(/SITE-MAP\)](#)

FIND US ON:

[TWITTER \(HTTP://TWITTER.COM/GOLDMANSCHOOL\)](http://twitter.com/goldmanschool) [FACEBOOK \(HTTP://WWW.FACEBOOK.COM/GOLDMANSCHOOL\)](http://www.facebook.com/goldmanschool)

[LINKEDIN \(HTTPS://WWW.LINKEDIN.COM/COMPANY/GOLDMAN-SCHOOL-OF-PUBLIC-POLICY\)](https://www.linkedin.com/company/goldman-school-of-public-policy)

[INSTAGRAM \(HTTPS://WWW.INSTAGRAM.COM/GOLDMANSCHOOL/\)](https://www.instagram.com/goldmanschool/) [UCTV PUBLIC POLICY \(HTTP://WWW.UCTV.TV/PUBLIC-POLICY/\)](http://www.uctv.tv/public-policy/)



- Washington Free Beacon - <http://freebeacon.com> -

## Pacific Gas & Cronyism

Posted By *Andrew Stiles* On March 14, 2012 @ 5:00 am In Issues | [No Comments](#)

---

President Obama's aggressive green energy agenda has produced its fair share of winners: Democratic donors such as [John Doerr](#), [George Kaiser](#), [Steve Spinner](#), [Sanjay Wagle](#), and [Harvey Whittemore](#); former vice president and green energy investor [Al Gore](#), General Electric CEO and White House jobs council chairman [Jeffrey Immelt](#), and [top executives at failed green energy firms](#).

And there have been losers: [Solyndra](#), [A123](#), [Ener1](#), [Fisker Automotive](#), [First Solar Inc.](#), [Amonix Inc.](#), [Beacon Power Corp.](#), [Energy Conversion Devices Inc.](#), [Nevada Geothermal Power](#), [Apound Solar](#), [SpectraWatt](#), [Cardinal Fastener & Specialty Co.](#), [Evergreen Solar](#), [Bright Automotive Inc.](#), [SunPower](#), [green energy shareholders](#), former Department of Energy loans director [Jonathan Silver](#), and [the American taxpayer](#), among others.

But few companies have more successfully cashed in on the flood of federal support for green energy than Pacific Gas & Electric (PG&E).

PG&E is the largest utility in California and operates as a [near-monopoly](#) in the northern half of the state. It [ranked 177th](#) on last year's Fortune 500 list, raking in \$13.8 billion in total revenues and \$1.1 billion in profit.

The company, which enjoys an extensive network of former high-ranking employees holding influential positions in government agencies at the federal and state level, has benefitted handsomely from government financing of green energy projects.

[According to Recovery.gov](#), PG&E received federal grants and contracts worth more than \$47 million as part of the 2009 stimulus package.

But that is hardly the extent to which the company has benefitted from federal largesse.

PG&E has become an aggressive buyer of power supplied by solar, wind, and other renewable sources, in large part due to [statutory requirements](#) under California's [Renewable Portfolio Standard](#), which mandated that 20 percent of the utility's electricity come from renewable sources by 2010—and 33 percent by 2020.

According the [Department of Energy Loans Program website](#), PG&E is the sole purchaser of power from a number of green energy projects financed with taxpayer dollars. Six solar projects that will sell power to PG&E have received a combined \$5.5 billion in taxpayer-backed

DOE loans, nearly one-third of the total funding allocated for the program in the stimulus package.

Those projects include the controversial BrightSource Energy development, linked to former Obama fundraiser Sanjay Wagle and Democratic fundraiser Harvey Whittemore, a close friend of Senate Majority Leader Harry Reid (D., Nev.) who is currently under FBI investigation for allegedly making illegal campaign contributions.

Additionally, PG&E has a power purchasing agreement with the Genesis Solar Energy Project, which has come under fire in recent months for its connection to the deaths of a number of local kit foxes—a protected species—and the possible defiling of a Native American burial site.

A renewable energy developer who has done business with PG&E told the *Washington Free Beacon* that the company operates as “basically a monopoly” in northern California, and is “pretty much impossible to deal with” as a result.

Projects cannot get approved without a power purchase agreement (PPA), typically lasting 20 years or longer, with PG&E, which routinely exploits its clout to demand exceedingly low prices.

According to the California Public Utilities Commission (CPUC), the government agency responsible for regulating the company and determining how much it can charge customers, payments made under PPAs “are fully recoverable in rates over the life of the PPA.” In other words, the costs are ultimately transferred to customers.

PG&E has managed to insulate itself from nearly all of the risks involved in the development process, the developer said, requiring prospective developers to put down multi-million dollar deposits and “jump through a ton of hoops” to get projects approved. Additional expenses—equipment upgrades, for example—are also typically passed on to consumers.

Another source, who has worked with PG&E in the past, declined to comment on the company, citing a fear of retribution. The developer who did speak to the *Free Beacon* said he was told not to speak to the press for this very reason. “They are shady as shit,” he said of PG&E.

When reached initially for comment, PG&E spokeswoman Lynsey Paulo asked to know the source of the allegations—either the name of the developer’s company or the particular stage of the development process the company was engaged in. Paulo later said she understood why the sources would prefer to be kept anonymous.

She said that while PG&E recognizes that renewable energy is more expensive, the company is meeting the California utility mandate “in ways that are cost effective to our customers.”

PG&E maintains a strong political presence in Washington, D.C., having spent \$81.4 million on



lobbying since 2008. The company's political action committee has given nearly \$380,000 to Democrats since 2008, more than double the amount it gave to Republicans during that same time. PG&E corporate officers and board members have given tens of thousands of dollars to President Obama and other Democrats since 2007.

The company is actively involved in California politics as well, primarily in support of Democrats. In 2010, PG&E gave more than \$1 million to Democratic candidates, and more than \$645,000 to the California Democratic Party. Gov. Jerry Brown (D) received \$31,580.

"PG&E believe that everybody benefits from a vibrant multipart system that provides the electorate with a broad field of qualified candidates," Paulo told the *Free Beacon*.

"Contributions are paid for with shareholder funds, not utility customer money."

Former PG&E employees currently hold, or previously held, high-ranking government positions at the state and federal level, furthering the company's influence.

Frank Lindh worked 16 years as an attorney for PG&E before being named general counsel of the CPUC. (He is also the father of convicted terrorist John Walker Lindh, who he has claimed is "entirely innocent.")

The relationship between PG&E and the CPUC has come under fire following an explosion at a San Bruno gas pipeline that killed eight people and destroyed nearly 40 homes. A subsequent investigation by the National Transportation Safety Board found that a history of operational deficiencies at PG&E and inadequate regulation by the CPUC were to blame for the tragedy. The company announced on Monday it would pay the city of San Bruno \$70 million in restitution for the blast.

The CPUC, which has the final say with respect to the PPAs between PG&E and developers, has on occasion rejected PPAs that it deems are "not price competitive with projects that are currently being offered to PG&E."

What this typically means, the developer said, is that higher-cost PPAs are revised to be brought in line with lower-cost arrangements, resulting in a better deal for PG&E. "This drives investors crazy," the developer said.

Mindy Spatt, spokeswoman for The Utility Reform Network (TURN), told the *Free Beacon* the CPUC's cozy relationship with the utilities it regulates is "the most egregious example" of how utility companies are able to game the system for their own gain at the expense of customers.

At least two former PG&E officials currently hold senior positions in Gov. Brown's administration. Former director of public affairs Dana Williamson was recently hired as a senior adviser, who will oversee the administration's lobbying efforts in Washington, D.C.

Last year, Brown appointed Nancy McFadden, PG&E's former senior vice president of public affairs, to the position of Executive Secretary for Legislation, Appointments and Policy. McFadden had previously served as general counsel to the U.S. Department of Transportation and was deputy chief of staff to former vice president and green energy investor Al Gore.

McFadden is also a former member of the Apollo Alliance, an influential conglomerate of labor groups and green energy proponents that boasts connections to Van Jones, the former White House green jobs czar who resigned under a cloud of controversy, and John Podesta, former president of the liberal think tank Center for American Progress and co-chairman of the Obama-Biden transition team. PG&E has donated at least \$75,000 to the Apollo Alliance since 2008.

Paulo said the company's network of former employees in influential positions was a testament to PG&E's "impressive and experienced workforce."

"Because of their talents, some of our former employees are called for opportunities in both the public and the private sector," she said.

Perhaps the most controversial former PG&E employee to hold an influential government post is Cathy Zoi. A former energy analyst for the company, Zoi served as chief of staff for environmental policy under President Clinton and was CEO of Gore's Alliance for Climate Protection, and was until recently President Obama's Assistant Secretary for Energy Efficiency and Renewable Energy (EERE). Part of her responsibilities included overseeing almost \$17 billion in federal stimulus funding for renewable energy projects.

Tim Carney of the *Washington Examiner* reported, "Zoi's tenure was rife with conflicts of interest." Her husband's window manufacturing company, Serious Materials, was publicly praised by Obama and visited by Vice President Biden. Serious received a stimulus tax credit worth more than \$584,000 and was the first window company to receive stimulus financing.

More:

Zoi testified before the Senate Energy and Natural Resources Committee in favor of a HOMESTAR program, also known as cash for caulkers, which became another subsidy for Serious.

At the time of her nomination, the couple owned between them 120,000 stock options in Serious Materials, according to her April 2009 personal financial disclosure. She also owned at least \$265,000 of stock in a Swiss company called Landis+Gyr that makes "smart meters," high-tech thermostats that the administration has promoted for saving energy.

Zoi left the Obama administration in February 2011 to join Silver Lake Kraftwerk, a private

equity fund financed by the controversial left-wing billionaire George Soros, who said, "developing alternative sources of energy and achieving greater energy efficiency is both a significant global investment opportunity and an environmental imperative."

PG&E's considerable political clout is evident to those with experience working with the company.

"There is definitely some politics going on," the developer told the *Washington Free Beacon*. "Everyone's in bed with everyone else."

"There is money to be made," he added. "But PG&E is making most of it."

---

Article printed from Washington Free Beacon: <http://freebeacon.com>

URL to article: <http://freebeacon.com/issues/pacific-gas-cronyism/>

Copyright © 2016 Washington Free Beacon. All rights reserved.





Zero  
Hedge

On a long enough timeline  
the survival rate for  
everyone drops to zero.

Published on Zero Hedge (<http://www.zerohedge.com>)

[Home](#) > [Blogs](#) > [William Craddick's blog](#) > Oroville Dam Disaster Is Latest In Series Of CA Government Corruption, Environmental Failures

# Oroville Dam Disaster Is Latest In Series Of CA Government Corruption, Environmental Failures

By William Craddick

Created 02/13/2017 - 16:41



[1]

by William Craddick [1]

Feb 13, 2017 4:41 PM

[2] [3]

On February 13th, 2017 residents in Oroville, CA, were given a last second, panicked directive [4] to evacuate their homes and flee the area due to concerns that the Oroville dam was about to imminently fail. At the time of this article, the dam has still not yet failed. Should it fail though, California's government may face tough questions about their failure to adequately prepare for a disaster they had been warned about for over a decade.

California negligently failed to make preparations for the inevitable end to a major drought [5] which had been occurring since 2011. For 12 years, environmental groups [6] had warned federal and state officials that the dam was likely to experience structural issues in the event of heavy rains and flooding. Reports [7] are surfacing that the large pothole which has lead to the failure of the Oroville dam spillway was known to the state government since 2013. Governor Jerry Brown had years to direct the Democrat controlled state government to authorize funding and enact plans for repairs to the dam while water levels remained low. The Water Quality, Supply, and Infrastructure Improvement Act of 2014 [8] set aside \$395,000,000 for flood management, but to date has not allocated any of it to actual repairs or projects, raising questions about where the money currently sits and what it has been used for since 2014.

California's corruption causes it to consistently approve projects which are financially and logistically convenient for special interest groups at the expense of their citizens. Energy companies in Southern California are currently being sued [9] by citizens over plans to bury nuclear waste from the reactors at San Onofre, California underwater in thin canisters without any clear explanation about how they would monitor the storage devices or explaining how the canisters will be removed once the 20 year approval permit has expired. The ill conceived project [10] was approved by the California Coastal Commission in 2015. The California Coastal Commission was created by Governor Jerry Brown and has been itself the source of controversy after they fired their executive director [11] Charles Lester, who was described as an "essential line of protection between developers and environmentalists." The Commission is currently the subject of multiple lawsuits [12], all of which allege that Coastal Commission members have had

improper private contacts with permit applicants (ex-parte communications) with developers or their representatives prior to voting on those permits.

Jerry Brown himself has recently come under scrutiny as well, after a February 1st, 2017 report by the Los Angeles Times <sup>[13]</sup> revealed that Governor Brown still retained \$15 million in campaign funds with no clear guidelines as to how he would spend it. This story follows reports <sup>[14]</sup> that Brown's Chief of Staff Nancy McFadden took over a million dollars from Pacific Gas & Electric Co. and continued to hold stock in PG&E despite playing a key role in the appointment process for new members of the state Public Utilities Commission, which regulates PG&E and other California utilities (including the ones behind the controversial plans for San Onofre's nuclear waste).

California California Coastal Commission California State Water Project California's government  
Corruption Environment Fail Feather River Kerning Oroville Oroville Dam Oroville,  
California Pacific Gas and Electric Company Public Utilities Commission Southern California  
Typography Water in California WebKit West Coast of the United States

**Source URL:** <http://www.zerohedge.com/news/2017-02-13/oroville-dam-disaster-latest-series-ca-government-corruption-environmental-failures>

**Links:**

- [1] <http://www.zerohedge.com/users/william-craddick>
- [2] <http://www.zerohedge.com/printmail/588160>
- [3] <http://www.zerohedge.com/print/588160>
- [4] <https://archive.is/1Hizz>
- [5] <http://archive.is/T67K2>
- [6] <http://archive.is/ba0Af>
- [7] <http://archive.is/LgPwV>
- [8] <http://archive.is/wGLnS>
- [9] <http://archive.is/GwK8V>
- [10] <http://archive.is/D3LbK>
- [11] <http://archive.is/T1PIK>
- [12] <http://archive.is/M1VIf>
- [13] <http://archive.is/iF1GB>
- [14] <http://archive.is/M8DFM>



**HOME**      **GOVERNMENT** ([HTTP://CAPITOLWATCHDOG.ORG/TAG/GOVERNMENT](http://CAPITOLWATCHDOG.ORG/TAG/GOVERNMENT))

**INDUSTRY** ([HTTP://CAPITOLWATCHDOG.ORG/TAG/INDUSTRY](http://CAPITOLWATCHDOG.ORG/TAG/INDUSTRY))

**MEDIA** ([HTTP://CAPITOLWATCHDOG.ORG/TAG/MEDIA](http://CAPITOLWATCHDOG.ORG/TAG/MEDIA))



**A Project of Consumer Watchdog** (<http://www.consumerwatchdog.org>)

## Did Kamala Harris Spike PUC Investigation To Help Her Democratic Friends?



Submitted by Liza Tucker on Tue, 04/05/2016 - 11:30

Why has CA Attorney General Kamala Harris issued search warrants for the offices of utilities and their regulators in a PUC corruption scandal and then not followed through? Could it be because she doesn't want to hurt powerful Democratic friends? That is what a **KPBS** (<http://www.kpbs.org/news/2016/apr/05/california-critics-kamala-harris-san-onofre-probe/>) investigative reporter is exploring.



When Harris sent investigators to execute a search warrant last year at the home of former PUC President Michael Peevey, consumer advocates cheered. That's where investigators found hand-written notes of a secret deal between Peevey and a Southern California Edison executive to put \$3.3 billion out of \$4.7 billion onto ratepayers for the closure of SCE's botched San Onofre nuclear generating stations. Nothing like a little help from your former boss. Peevey was once the President of Southern California Edison.

KPBS reports that six months later, Harris issued another search warrant for the offices of Southern California Edison and the PUC. Inexplicably, investigators never showed up, according to Mike Aguirre, a consumer attorney and former federal prosecutor. "You don't drop it off at the front door and say, 'Hey, gee send me your records.' That's the whole point of the search warrant is that you go in and you execute the search warrant and you seize the records because you are concerned that they are going to disappear," he told KPBS.

Aguirre's been fighting for access to public records about the deal that the PUC refuses to release. The PUC is claiming the documents are privileged. Harris could waive that privilege, but so far *nada*. "She has no presence, she has no involvement, she has no leadership. You have no sense of her being out there, out front, and saying, 'We're charging forward to do what's right,'" Aguirre said. Now why is that?



California Governor Jerry Brown could waive privilege, but he won't. That's because some of the communications about the San Onofre deal are between the Governor and the PUC—which may be why the PUC is fighting Aguirre so hard to keep them secret. Brown's coziness with utilities, and penchant for appointing former utility executives to positions of power, have raised troubling questions about his loyalty to utility interests rather than the public interest.

For one, Brown's executive secretary, **Nancy McFadden** (<http://www.consumerwatchdog.org/newsrelease/fppc-opens-investigation-governor's-top-aide-failure-disclose-timing-stock-sales-pge>), is a former Pacific Gas & Electric vice president. Now, because of our ethics complaint about McFadden to the Fair Political Practices Commission, she's under investigation for failing to disclose required information about her stock ownership in Pacific Gas & Electric after she joined Brown's staff.

Aguirre is continuing to fight for those emails after a Superior Court ruling that the emails could be reviewed for release was blocked. After an Appeals Court judge who went to law school with Brown issued a stay, Aguirre successfully fought to have him **removed** (<http://www.sandiegouniontribune.com/news/2016/mar/09/kline-out/>) from hearing the case. Could the release of those emails be so threatening to Brown that he will do anything to stop them from seeing the light of day?

Is this why Kamala Harris, who could access the records and communications that Aguirre seeks, is failing to act at all? Is she just running out the clock to keep from public scrutiny any evidence of corruption among her powerful democratic friends? Only time will tell.

Harris appears to be repeating the same mistake of inaction she made in the case against PG&E over San Bruno, which was taken over by the US Justice Department prosecuting the case this month. A big PG&E connection to Harris? Longtime mentor Willie Brown is also a longtime PG&E consultant.

Critics Unhappy With Kamala Harris' Approach To San Onofre Pr...



*Sign up for weekly Capitol Watchdog news alerts.*

Email\*

Submit

[Home](#)

Mon Feb 27 11:09:32 EST 2017  
Pruitt.Scott@epamail.epa.gov  
Fw: Fw: Ignored Oroville warning raises big quake, levee questions  
To: CMS.OEX@epamail.epa.gov

---

---

**From:** (b) (6)  
**Sent:** Monday, February 27, 2017 10:12 AM  
**To:** Pruitt, Scott; tdelias@aol.com  
**Subject:** Fw: Fw: Ignored Oroville warning raises big quake, levee questions

Dear EPA Secretary Pruitt,

This Thomas Elias wrote a article/column basically attacking you and President Trump over your links to energy companies and was basically accusing you of being corrupt.

But when I suggest that we work together to put you to the test and help expose PG&E, Regional Water Board (Gov. Brown Democrat Liberal Gov.) and SWRCB ( Gov. Gov. Democrat Liberal Gov. ) it appears he doesn't want to do that even though it has direct links to Oroville, Butte County and PG&E which has direct links to DWR and Oroville Dam.

It even has direct links to the Butte County DA's Office because one of their investigators gave me evidence and/or statements from a SWRCB in Redding (who permitted the R-503 Gridley, Butte County Project) that greatly contradict statements that the SWRCB Investigator made in his report about the PG&E facilities , waste water and disposal locations.

The SWRCB Officials basically said that none of the Butte County waste water left Butte County and/or was transported outside of Butte County to Sutter County which greatly contradicts what the SWRCB investigator reported.

PG&E was transporting and discharging waste water outside of Butte County and disposing of it at locations not listed in the NOIs which is prohibited according to the NOIs.

Sincerely- (b) (6)

----- Forwarded Message -----

**From:** (b) (6)  
**To:** "Tdelias@aol.com" <Tdelias@aol.com>  
**Sent:** Sunday, February 26, 2017 5:57 PM  
**Subject:** Re: Fw: Ignored Oroville warning raises big quake, levee questions

(b) (6) has been discharging waste , diesel, pesticides and other contaminants for 30+ years at the location that PG&E staged their facility and I have documented it since 2004 but Sutter County, Regional Water, SWRCB and the EPA have failed to conduct any sampling and testing at this location that I know of.

I have attached some photos of his practices in Sutter and Butte Counties.

How about we work together and put EPA Secretary Pruitt to the test and see if he will get the EPA to investigate and investigate how the Regional Water Board and SWRCB handled and investigated PG&E ?

Get the EPA to investigate why the Regional Water Board would allow a PG&E project on (b) (6) Property when he has a long history with them, ignoring regulations and violating regulation.

Will

---

**From** "Tdelias@aol.com" <Tdelias@aol.com>  
**To** (b) (6)  
**Sent** Sunday, February 26, 2017 3:18 PM  
**Subject** Re: Fw: Ignored Oroville warning raises big quake, levee questions

Thanks for copying me in on your note, Mr. (b) (6) . As you know, I have written frequently about corruption involved California officials and PG&E, but so far am unaware of strong links between this ongoing problem and Oroville dam difficulties.  
tom elias

In a message dated 2/26/2017 3:14 56 P.M. Pacific Standard Time, (b) (6) writes:

Dear EPA Secretary Pruitt,

I have sent you several emails regarding what has been going on in our area regarding the Democrat / Liberal controlled California Government SWRCB authoring false / misleading report that helped PG&E and (b) (6) who has a long history ignoring regulations, violating regulations and illegally transporting, discharging, storing and disposing of waste and ash going to and coming from a bio-mass plant in Oroville which was producing toxic ash that was being used as soil amendment on farmlands in the area.

It appears that PG&E benefited and / or profited from the illegally transported, stored, discharge and disposed waste and ash because PG&E was buying and selling the power that the bio-mass plant.

(b) (6) was involved in the Green Energy / Global Warming / Climate Change Scam by illegally transporting, storing, discharging and disposing of waste and ash.

PG&E Pipeline Repair Projects R-502 and R-503 NOIs was approved by our Regional Water Boards and a PG&E facility / discharge was approved to (b) (6) Property by the Regional Board even though they knew (b) (6) has a long history ignoring regulations, violating regulations including at the very site that they approved the PG&E facility / discharge.

It appear to us that they were discharging into the drainage ditch and / or the facility was leaking, spilling and discharging into the ditch so I submitted a complaint to Sutter County which included photos and other material. Sutter County issued (b) (6) a violation so it appears the evidence was good enough to convince them they were discharging but it was later retracted because of SWRCB.

SWRCB Special Investigations Unit investigated and authored a report that was false / misleading and failed to inspect the waste water and facility before they were removed and failed to calculate if more waste water came in than went out to help determine if there was a discharge which helped PG&E. Basically they allowed PG&E to clean up the crime scene or violation scene and remove evidence before they inspected it and failed to include photos of the location that would have contradicted statements made by PG&E and / or its contractors regarding storm water being ponded after approximately 2 weeks of dry weather. We have been in a extreme drought state of emergency since 2014 so its storm water does not stay ponded in our area after approximately 2 weeks of dry weather in extreme drought conditions.

The Obama Administration and Democrats gave away billions of dollars to Green Energy Projects and Companies including to many in California linked to Gov. Brown and Democrats but much of that money was wasted because some of the companies went bankrupt.

At least tens of millions went to PG&E.

But it appears that none of this money that came to California and PG&E was spent to fix the problems with Oroville Dam which is closely linked to Democrats / Liberals who have basically been bought and paid for by PG&E.

The water levels at Oroville Dam are linked to DWR and PG&E which are linked to Gov. Brown, Democrats and Liberals and not President Trump and his administration.